This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

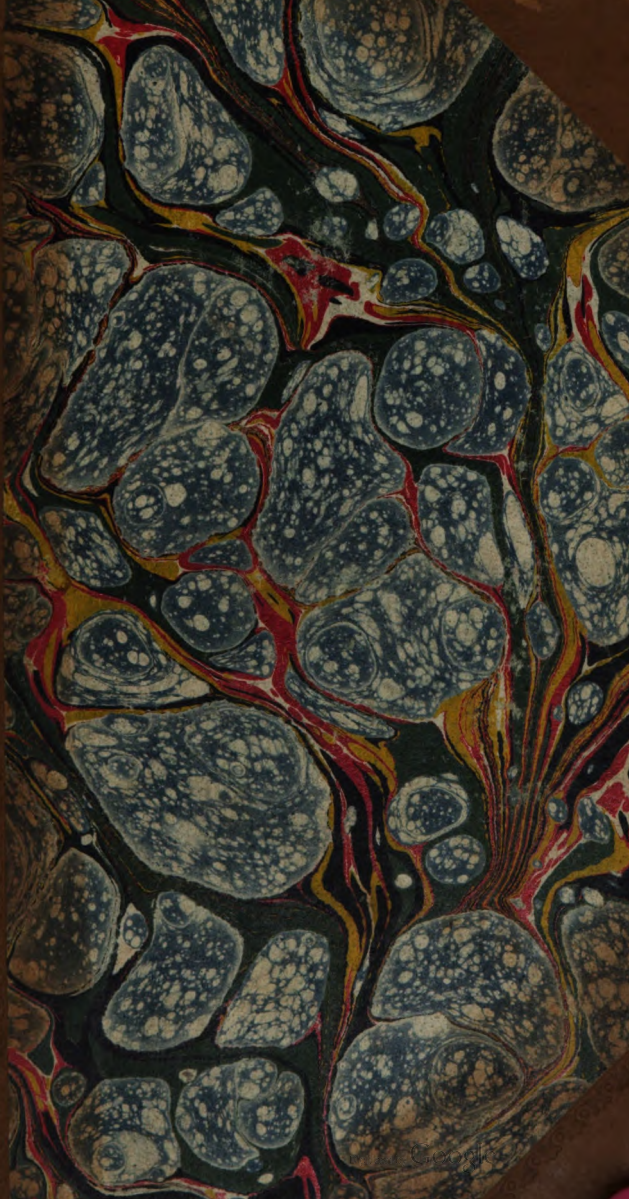
+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

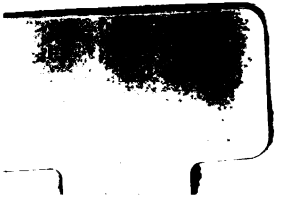
About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`



29
188.

6000039060



Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

J.A.1829

NATURE REVIEWED:

OR,

50

A HISTORY

Of the principal Domestic

PRODUCTIONS OF THE EARTH;

WITH AN EXPLANATION

OF THEIR

PROPERTIES AND USES,

COMPILED FROM THE BEST AUTHORITIES.

CHELMSFORD:

PRINTED BY MEGGY AND CHALK.

SOLD BY H. GUY; SWINBORNE, WALTER, AND TAYLOR, COLCHESTER; W. MEGGY, YARMOUTH; LONGMAN AND CO. BALDWIN AND CO. HARRIS AND SON, DARTON AND HARVEY, LONDON; AND BY ALL OTHER BOOKSELLERS IN TOWN AND COUNTRY.

1829.

188.

Digitized by Google

[ENTERED AT STATIONERS' HALL.]

Digitized by Google

PREFACE.

In sending forth to the public the following sheets, which have been composed and printed more for private amusement and domestic use, than for the arena of public criticism, it will naturally be expected that the author should say something by way of ushering into the world this little offspring of the mind. But, as "none but an author knows an author's pains," it is difficult to divest ourselves of every particle of egotism when speaking of our own labours. The design of the present work has been to collect, investigate, and define, those articles which are most familiar in domestic uses, either as matters of taste, luxury, ornament, or necessity; each article forming a concise, but complete and untechnical, history of the subject upon which it treats. To instruct, amuse, and benefit the younger branches of society, has been the chief aim of the present publication. Amidst the numerous works which a prolific press has brought

Digitized by Google

before the public within the last few years, essays have indeed appeared which descanted upon, or investigated, many of the subjects here treated of, but they have been either of so scientific a nature as to render them unintelligible to any but the professors of science, or so voluminous and expensive as to place them beyond the reach of two-thirds of the reading members of society. A knowledge of those articles which form, as it were, the basis of domestic comfort, luxury, and use, or which keep, to speak figuratively, the wheels of life in motion, may appear dispensible, but cannot be considered unnecessary. When we consider the complicated manner in which many of the most common domestic articles are prepared, previously to reaching our hands,—the distance they are brought,—and the countries in which they are cultivated, it will not be surprising to find that even the most intelligent persons are often ignorant of their real nature, and unable to ascertain the true properties of things which they hold in constant use. Nature's works never appear to greater advantage than when traced to their original source. It may perhaps be degrading to the mind of vain and superficial pride to see its blazing diamond and milky pearl traced through all the metamorphoses of art to their first origin, degraded to a dirty stone, or the shell of an insignificant fish, but such pursuits as these must ever form a source of pleasure to the enquiring and reflective observer. Besides, whilst it thus opens to the uncultivated mind the wide and expansive treasury of mysterious nature, it also exhibits

Digitized by Google

the invention, the genius, and the enterprize of man,—it collects the scattered intellect of the world,—throws a halo of useful glory around the placid and dawning bosom of science, and shows in what manner the labours of the philosophic mind, the studious hour, and the "midnight oil," are rendered available to the human race. These observations are not meant to send this volume to the public as a treatise on natural philosophy; they are merely made as showing the nature and the objects of the work. The sun-beams of ornamental literature, the flash of imagination, and the flowers of rhetoric, may shed their lustre around the works of fiction and fancy; but it has not been attempted to enlist them into the service of the writer of the following sheets; the chief aim has been to send them forth in the plain garb of simplicity and usefulness, trusting to the public for a friendly glance at the production of a few "hours of idleness."

Digitized by Google

CONTENTS.

	PAGE.
Arrowroot	1
Allspice	2
Alum	3
Alcohol (see Spirit of Wine, p. 99)	5
Aloe	5
Aloe Wood	6
Aloe (American)	7
Arsenic	7
Arnotto	8
Antimony	8
Ambergris	9
Amber	10
Alabaster	11
Asbestos	12
Arack	14
Bismuth	14
Brimstone (see Sulphur, p. 107)	14
Brandy	15
Brazil Wood	15
Brass	16
Bronze	17
Cotton Tree	17
Caper	18
Coral	19
Cedar	20
Copper	21
Copperas	23
Clove Tree	23
Cobalt	24
Charcoal	25
Coffee	26
Coal	27
Cocoa	28
Chocolate	29
Cork	30
Copal	31
Cayenne	32
Chamois	33
Cochineal	33
Cinnamon Tree	33

Digitized by Google

	PAGE.
Chalk	35
Camphor	36
Cassada (see Tapioca, p. 119)	37
Citron	37
Caraway	37
Cimolia	38
Clay	38
Date	39
Diamond	39
Emery	40
Fullers' Earth	41
Flax	42
Fig	44
Gum	45
Granite	47
Gypsum	48
Gold	49
Glue	50
Gin	51
Ginger	52
Gunpowder	52
Hop	53
Horn	54
Hartshorn	55
Hemp	55
Ivory	57
Ink	58
Iron	59
Indian Rubber	61
Isinglass	62
Indigo	64
Jet	65
Juniper Berries	66
Kali	67
Kelp	67
Kermes	68
Laudanum	69
Loadstone	69
Linseed (see Flax, p. 42)	72
Lead	72
Logwood	74
Lime	74
Limes (see Citron, p. 37)	75
Morocco	75
Manganese	75
Mahogany	76
Millet	77
Marble	78
Mustard	78
Mace	79
Malt	80
Mohair (see Wool, p. 128)	80
Musk	80
Mercury (see Quicksilver, p. 94)	81
Mother of Pearl	81
Nitre (see Saltpetre, p. 110)	81
Nutmeg	82
Olives	83
Opium	84
Oil	84
Pumice Stone	85
Pounce	85
Pearlash	86
Pepper	86
Pewter	88
Potash	88
Pearls	89
Pitch	90
Phosphorus	91
Parchment	91
Platina	93
Pomegranate	93
Quicksilver	94
Rum	95
Rice	95

Digitized by Google

	PAGE.
Resin	97
Shagreen	98
Spar	98
Spirit of Wine	99
Sealing Wax	100
Starch	100
Slate	101
Soda	102
Sponge	102
Silk	103
Silver	104
Sugar	105
Sulphur	107
Spermaceti	107
Salt	108
Saltpetre	110
Sago	112
Steel (see Iron, p. 59)	112
Snuff	112
Salep	113
Sepia	113
Tea Plant	115
Turpentine	116
Talc	117
Tow (see Hemp, p. 56)	118
Tin	118
Tapioca	119
Tortoiseshell	120
Tar	121
Tobacco	122
Tamarinds	124
Vanilla	124
Vitriol	125
Vinegar	126
Wax	127
Wafers	128
Wool	128
Whalebone	129
Zinc	130

Digitized by Google

ARROW ROOT OR MARANTA, (INDIA.)

OF this valuable plant there are three species, perennial exotics of the Indies, the principal of which is the Arundinacea, or Starch Plant. The following process of obtaining starch from this root is thus described by Dr. Wright, of Jamaica:—"The roots, when a year old, are dug up, well washed in water, and then beaten to a pulp in deep wooden mortars. This is thrown into a tub of clean water. The whole is then well stirred, and the fibrous part wrung out by the hands, and thrown away. The milky liquor being passed through a sieve, is suffered to settle, and the clear water is drained off. At the bottom of the vessel is a white mass, which is again mixed with clear water and drained; lastly, the mass is dried in the sun, and thus becomes pure starch, for which, since 1796, it has been occasionally used." It appears to afford more nutritive mucilage than any European vegetable. It is cultivated in

Digitized by Google

this country, in hot-houses, as a curiosity, and in the gardens and provision grounds in the West Indies. It is strongly recommended to the planters there, and to the Colonists in Africa, as an object of commerce, considering that the fine starch procured from it would prove an eligible substitute for that made from wheat. The root of the species Galanga is used by the Indians for extracting the poison communicated by their arrows, from which circumstance it derives its name.

ALLSPICE, OR PIMENTO, OR JAMAICA PEPPER.

The fruit of a species of Myrtus, a native of Jamaica, and other American Islands, growing spontaneously, and in great abundance, particularly near the sea, on elevated situations, where the trees form groves, and the smell being aromatic fills the air with fragrance. The fruit is gathered green, and not allowed to ripen, as it would then be extremely difficult to cure, the pulp being very moist. After gathering the berries, they are exposed for many days to the sun, until they become thoroughly dried. Care is taken to protect them from the morning and evening dews, which are injurious. The crops are very uncertain. Its name is derived from its partaking of the united flavour of all the other spices,

Digitized by Google

and it is used both in medicine and food, and abounds with a fragrant essential oil, (1) which is separated by distillation, (2) and is so heavy that it sinks in water.

ALUM.

A concrete salt, clear and transparent, used in medicine and in various arts. Generally it is an artificial manufacture, but it is occasionally found pure, having been washed from its ore by water, which, evaporating, leaves it in a dry form. It is separated by chemical processes from various substances; in Italy from a soft reddish stone, and in England from a blueish stone, called Irish slate, which abounds in the hills of Yorkshire and Lancashire. In Egypt, Sardinia, Spain, and Bohemia, it is sometimes discovered in crystals. There are several kinds of Alum, but they only differ according to the salts with which they are combined; that called the Roman Alum is considered the best; it inclines to a red colour, possessing a small portion of iron, which however does not injure its qualities. The other varieties differ according to the alkali (3) used in the preparation. The manufacture of Alum was first begun in the reign of James I., who monopolized the trade, and forbade its importation. Alum mines were said to be first discovered in Italy

Digitized by Google

in 1460, and a monopolizing grant was made of them by Henry VII. to a merchant of Sienna. The manufacture of this substance received great encouragement, particularly from Lord Sheffield and other gentlemen of Yorkshire. It is of important service in fixing colours, both in washing and dyeing. It is the basis of crayons, which usually consist of the earth of Alum, finely powdered and tinged for the purpose. When mixed with tallow it gives a firm consistency to candles; it is also employed by tanners to assist in restoring the cohesion of the skins when injured by lime,—to dry cod fish,—to fine wines,—to silver brass without heat,—and to whiten silver by paper impregnated with it. Wood and paper soaked in a solution (4) of this salt are prevented from easily taking fire, and are therefore used in preserving gunpowder, as it likewise excludes the moisture of the air. It is also used in preparing colours, particularly Prussian Blue, and is of essential service in purifying water. The introduction of Alum into bread is thus defended by Dr. Darwin:—"I suppose the use of Alum in making bread, consists in coagulating the mucilage, and perhaps thus contributing to convert it into starch, for the bakers mix it principally with new wheat, and affirm that it makes the flour of new wheat equal to the old. Alum is also used by the London bakers for the purpose of cleansing the river water with which they are supplied,

Digitized by Google

also to destroy the volatile alkali which exists in some London wells. Its use may therefore be rather salutary than injurious to the London bread, and in some medicinal points of view it may prove serviceable, though in others equally pernicious, therefore its introduction is better abstained from."

ALCOHOL, *(see Spirits of Wine.)*

ALOE.

There are several species of this plant, possessing various qualities, useful both for domestic and medicinal purposes. The species Maguei, of Mexico, appears to be applied to almost every convenience of life. From its trunk beams are formed for the roofs of the houses of the natives, and its leaves are used as tiles; it also serves for hedges and inclosures, besides being convertible into cords, needles, thread, paper, shoes, stockings, and many other articles of clothing. From the juice the Mexicans extract wine, honey, sugar, and vinegar, and the leaves when baked are esteemed an agreeable dish. From the Guinea Aloe very strong ropes are made, not liable to rot in water. Two other species have also been described, one of which is peculiarly serviceable to travellers in hot climates, as the leaves are capable of containing water. The other is manufactured

Digitized by Google

into fishing-lines, bow-strings, hammocks, &c. The Aloe is esteemed by the Mahometans as a safe-guard against evil spirits and apparitions, for which purpose it is frequently placed over their doors; and this sign often implies that the inhabitant has performed a pilgrimage to Mecca. The Aloe as a medicine is generally known in the form of an inspissated (5) juice, called Extract.

ALOE WOOD, OR XYLO ALOE.

A precious wood, used in the East as a perfume, and is esteemed of greater value than gold. The tree, which grows in China and in some of the Indian Islands, is composed of three different kinds of wood. The heart of the tree is called Tambac, in which jewels are frequently set; this is also used as a cordial. When laid on a fire it quickly consumes, leaving a most fragrant and agreeable smell. It was considered so valuable that it was presented by the King of Siam to the King of France, in 1686, as the greatest gift he could offer. The middle wood, called the Lignum, considered the next in value, is not so strongly aromatic as the Tambac; and the part next the bark, denominated by the Portuguese Pao d'aquila, or Eagle Wood, is black and heavy; some consider this another species, but this is imperfectly known.

Digitized by Google

AMERICAN ALOE, OR AGAVE.

A plant common in England, the stem of which generally grows to the height of twenty feet and upwards, and is supposed to blossom only once in 100 years; this by some is attributed to the climate, as in hot countries it flowers more frequently. It has been known to attain the height of 35 feet.

ARSENIC.

A powerful metallic poison, which taken inwardly is generally attended with fatal consequences, arising from its insolubility, (6) and the difficulty of its being quickly decompounded. (7) It is heavy, opaque, and usually sold in white masses, which when broken discover a semi-transparency, resembling Sal Ammoniac, but when exposed to the air become like the original masses. When heated, or struck with a hammer, it emits the odour of garlic, and it may also be known by its rapid volatilization. (8) Most metallic ores contain a proportion of it, particularly tin, copper, bismuth, and cobalt, from the last of which it is extracted, by sublimation. (9) The Sulphuret of Arsenic, called Realgar, is scarlet or orange red, and melts in the flame of a candle. There is another variety, called Orpiment, of a yellow colour; these are used by painters. It is frequently added to produce

Digitized by Google

opacity, and to facilitate the fusion (10) of glass. It easily dissolves Indigo, when combined with Sulphur, and is therefore of service in dyeing. Its true nature is so imperfectly known, that whether it ought to be ranked among the salts or semi-metals is not decided, as, by various processes, it assumes either a saline or metallic state. It is used medicinally, particularly in cancerous diseases; in Tic Doloreux, and in some distracting pains in the face.

ARNOTTO, ANATA, OR ANOTTA.

A dye, formed from the pulp of the seeds of the Bica, a tree common in South America, of which there are two kinds, one a crimson colour, and the other more of a saffron hue, which last is our Anotta, and is generally supposed to be a mixture of the first sort with certain resinous matters, and with the juice of the root of the tree. Calico coloured with Anotta is called Nankeen, from Nankin, in China, whence it was first brought to us. Anotta is also used in the preparation of chocolate.

ANTIMONY.

A heavy dark mineral substance, found in different parts of Europe; that procured in England being frequently mixed with lead, is rendered improper

Digitized by Google

for medicinal purposes ; the impurities of the foreign kinds are extracted by melting in proper vessels, when the pure matter sinks, leaving the dross above. It is often found in long thin crystals, like needles, and is commonly of a dull grey colour. It is soft to the knife, very brittle, and melts instantly upon being applied to heat. The ore, when fresh broken, appears like a lump of pure steel. When analyzed, this mineral is found to consist of a metal united with common sulphur. It was for some time considered poisonous, and its use was consequently forbade in 1566, but, being allowed when in its crude state (11) to possess no noxious quality, this edict was in 1650 repealed. In diseases, and in fattening animals, its virtues are highly extolled ; and it is also much employed in purifying gold, casting cannon balls, and in melting metals ; it renders tin hard, white, and sounding. It is used in bell metal, to make the sound clear, and is mixed with lead, to render printers' types more smooth and firm. The ancients used it with the paint with which they blackened round their eyes, and eyelids, then esteemed marks of beauty, and even to this day, in some foreign parts, the custom is continued.

AMBERGRIS, OR GREY AMBER.

A solid opaque substance, of a grey or ash colour, which melts like wax, principally used for perfumery,

Digitized by Google

but sometimes medicinally. The Asiatics and Africans use it as a spice. The opinions concerning its original state are so various, that no decided account has ever been given. It is found floating on the sea, and is frequently taken from the inside of the Spermaceti Whale, contained in a bag about three feet in length, in round lumps, weighing from one to twenty pounds; and that it is generated in the bowels of that fish, appears the most probable account ever yet received, an opinion strengthened by the circumstance of beaks, or parts of beaks of the cuttle fish, which is the natural food of the Spermaceti Whale, being found in the Ambergris, and it also proves that it has been in a liquid state.

AMBER.

A yellow transparent gummy substance, the origin of which, like the preceding article, has never been ascertained, it being occasionally classed with the vegetable, mineral, and even animal, kingdom. It is found in the Baltic sea, but principally along the coasts, and in the inland parts of Prussia, from which circumstance that country has been styled The Country of Amber. It is also found in almost every part of Europe, and in England, occasionally, by the shores of Yorkshire, Yarmouth, &c. and even in pits near the Metropolis. Pliny supposed it to be a resinous juice oozing from old pines and firs, and thence running into the sea; which opinion has

Digitized by Google

been strengthened by other writers. Insects, leaves, &c. have frequently been found inclosed in it, which increases the probability of its having been in a liquid state. It still remains, as before Christ, in repute for medicinal purposes. It possesses the property, when heated by friction, of attracting light substances, and when rubbed it yields considerable light in the dark.

"The spoils of Elephants, the roofs inlay,
And studded Amber darts a golden ray."

POPE.

From its Greek name Ηλεκτρον the term electricity is derived. It forms the basis of the best varnishes. When once melted it never recovers its beauty or hardness. It yields by distillation a volatile acid salt, which is produced by no other bituminous substance, (12) and when dissolved has a fragrant smell. It is principally yellow and white; the former, from its greater transpareney, is better calculated for ornaments, the latter for medicine.

ALABASTER.

A kind of soft marble, of which there are three species, the first and most common is a pure snowy white, found in Taurus; the next is yellow, like honey, and is brought from Greece, this has likewise been found in France, Germany, and Derbyshire. The third kind is the Alabaster of the ancients, and is variegated, yellow and red. After

Digitized by Google

being calcined (13) and mixed with water, it is used as plaster of Paris, and cast into moulds, when it quickly coagulates into a firm body. As it cuts smoothly and takes a very beautiful polish, it is employed by statuaries for columns, vases, statues, &c. Alabaster possesses vitriolic acid, and therefore differs from Marble. It has been sometimes used for windows, and there is still a church at Florence in which it is substituted for glass. *(See Gypsum.)*

ASBESTOS.

A fossil stone, of a greenish or silvery white appearance, capable of being divided into very fine, brittle, silky filaments, possessing the wonderful property of remaining unconsumed in fire, which only whitens it. This mineral is found in Egypt, France, Siberia, in some parts of Scotland and Wales, &c. generally in shapeless masses, varying both in weight and hardness. It was formerly manufactured into paper and cloth, but in the weaving, linen or woollen threads were added, which were afterwards burnt away. The method of preparing it is thus described:—"The stone is laid to soak in warm water; then opened and divided by the hands, that the earthy matter may be washed out. The ablution being several times repeated, the flaxy-like filaments are collected and dried; and

Digitized by Google

they are most conveniently spun with an addition of flax. Two or three filaments of the Asbestos are easily twisted with the flaxen thread, if the operator's fingers are kept oiled. The cloth, also, when woven, is best preserved by oil from breaking or wasting. On exposure to the fire the flax and the oil burn out, and the cloth remains pure and white."—The shorter filaments may be made into paper in a similar way. In this cloth the ancients burnt the bodies of their dead, and were thereby enabled to preserve the ashes without mixture. There are several relics of this cloth remaining. In the Museum of the Vatican at Rome there is a winding sheet of Asbestos, coarsely spun, but as soft and pliant as silk. It was discovered in a funeral urn, containing burnt bones, in 1702. A handkerchief or pattern of it was presented to the Royal Society. In an experiment made upon it, although it resisted fire, it lost three drachms of weight, but this is supposed to have arisen from the dissipation of some extraneous matter. Some of the threads were used as lamp-wicks, and it is asserted that Kircher, a German philosopher, had one which burnt for two years, and was afterwards accidentally destroyed. Pliny informs us that the Romans used it woven into table cloths, towels, &c. and that they were thrown into the fire to be cleansed. The species of Asbestos, called Amianthus, was more generally used, and is often known by the name of Plumose Alum.

Digitized by Google

ARACK, ARRACK, OR RACK.

A spirituous liquor, generally considered to be obtained by distillation, in the East Indies, from rice or sugar, fermented with the juice of cocoa nuts. Arack is also the name of a liquor more intoxicating than Brandy, used by the Tartars, and made from sour milk distilled.

BISMUTH, OR TIN GLASS.

A metal that is not malleable, (14) found more generally in a native state than any other metallic substance, although it is sometimes mixed with Sulphur, Silver, Arsenic, and an earthy matter. It is commonly found in Germany, and occasionally in the tin mines of Cornwall. Most metallic substances unite with it, but its use is rather confined. It is a constituent of pewter, and forms a soft solder used by glaziers, and in printers' types. From its more effectually destroying the baser metals, it is the best purifier of gold and silver, and with it quicksilver is sometimes adulterated, in which state this article is rendered unfit for the purposes of gilding and silvering, and if not detected early spoils the appearance of the work.

BRIMSTONE *(See Sulphur)*.

Digitized by Google

BRANDY.

A spirituous inflammable liquor, extracted from wine by distillation. The French Brandy is in the highest repute, particularly that from Cognac. It is generally made from wines which are unfit for use, and during the vintage the inferior grapes are directly pressed, fermented, and distilled. (15) The flavour of brandy differs according to the species of grape from which it is extracted, and from this also may originate the peculiar flavour of the French Brandy, although it is supposed to be derived from the use of an essential oil of wine. It is naturally colourless, but from the cask, and the addition of burnt sugar, which by some is considered an improvement, arise the various degrees of colour it possesses.

BRAZIL WOOD, BRASILLETTO, OR CAESALPINA.

The wood of a tree, growing in America, Japan, &c. but the best is obtained from Fernambuco. From this wood is extracted a red colour, much used in dyeing. It grows in dry barren places, and is covered with an uncommonly thick bark. It is used by turners, and is capable of being highly polished. From its name many have supposed it to be a native of Brazil, but this appears incorrect, as it is mentioned by Chaucer, before the discovery of that country, in the following lines:—

"He loketh as a Sparhawk with his eyen,
Him nedeth not his colour for to dien
With Brazil, ne with grain of Portingale."

Digitized by Google

BRASS.

A factitious (16) metal, formed of copper and zinc, or *lapis calaminaris*, called by the French yellow copper. Its first formation is very old, being mentioned in the book of Genesis, (17) and although the ancient Britons were acquainted with its use, as well as that of iron, (both of which appear to have been known about the same time,) they remained ignorant that from the bosom of their own country these metals were to be obtained, and even after this discovery, they were supplied from the Continent, probably considering that they purchased them at a less expence than they could otherwise be procured. A few founderies were erected in the Island, and more were added after the Roman invasion. The Britons used Brass for their arms, money, and various domestic implements, preferring it to iron for the former purpose, on account of its being brighter, which property they highly esteemed. When the Romans entered the Island they were anxious to make a profitable use of the knowledge their predecessors had gained respecting these veins of ore, and quickly obtained the necessary information relative to their respective situations. Brass, when thrice calcined, is used for imparting beautiful colours to glass, which differ according to the proportions employed; thus green, blue, and even red and yellow, may be obtained by varying the preparations. Copper beaten out very thin, and

Digitized by Google

coloured yellow, is called Brass Leaf, in the preparation of which the Germans are allowed to excel, by simply exposing them to the fumes of zinc, without any mixture with the metal. In this state it is frequently used in common gilding.

BRONZE.

A metal brittle, hard, and sonorous, a compound of copper and tin, though other metallic substances, particularly zinc, are sometimes added. It is used in making bells, statues, and cannons, and in the construction of any thing exposed to the air, being less liable to corrode than pure copper. There are very good imitations of Bronze, sometimes called Brass Colour, the yellow made from copper-dust, and the red made from the same, mixed with a small quantity of red ochre, pulverized. (18)

COTTON TREE, OR GOSSYPIAM.

A native of the East and West Indies; the finest grows on the Coromandel coast. The tree is only suffered to attain the height of four or five feet, and when the fruit, which resembles a walnut, is ripe the shell bursts, and the cotton is procured. It is packed in bags, and great precaution is taken to preserve it from wet. Before it is manufactured into

Digitized by Google

muslins, calicoes, &c. it undergoes a variety of processes, very accurately described by Darwin in the following lines :—

"First with nice eye emerging maidens cull,
From leath'ry pods the vegetable wool,
With wiry teeth revolving cards release
The tangled knots, and smooth the revell'd fleece;
Next moves the iron hand, with fingers fine,
Combs the wide card and forms the eternal line;
Slow with soft lips the whirling can acquires
The tender skeins, and wraps in rising spires,
With quicken'd pace successive rollers move,
And these retain and those extend the rove;
Then fly the spoles, the rapid axles glow,
While slowly circumvolves the lab'ring wheel below."

This affords employment to thousands of the poorer class, and when manufactured forms an essential part of clothing. The cotton mills, in which the various operations are performed, have now arrived at a state of great perfection, and are scattered over the United Kingdom.

CAPER, OR CAPPERIS.

A low prickly shrub, growing in most of the warmer parts of Europe. There are several species of this plant, but the Spinosa is the common Caper, imported from Italy and the Mediteranean, and so

Digitized by Google

much used as a sauce. It is difficult to preserve this plant in Britain, its native soil being on rocks or on old walls. The flowers appear from between the branches, and are gathered in the bud and pickled; they are considered to excite appetite and promote digestion, and are therefore wholesome. Our nasturtium forms a good imitation, pickled in the same manner, and is warmer and more aromatic.

CORAL.

Of the nature of this substance various opinions exist, some considering it to be formed of vegetables, hardened by the air, and others by a mass of insects, of the Polype (19) kind, which last supposition appears to be the most prevalent. It is correctly ascertained that most of the Islands in the South Sea are composed of Coral, covered with earth, and the Friendly Islands appear to be the most ancient of this nature. The coral insects do not commence their labours at the extreme depth of the ocean, but on rocky shoals, round which they form a united chain. When first taken out of the sea, the surface is soft, and yields a milky juice, which is supposed to proceed from the glands of the insect Polype. This matter gradually ceasing to flow, becomes hard and firm, and ultimately forms the hard substance called Coral. The productions

Digitized by Google

of these little insects vary according to their form, size, and colour. There are properly but three kinds, red, white, and black, which last is most esteemed. Of the former very excellent imitations are made. It is found on the shores of France, about the Islands of the Mediterranean, and on the coast of Africa. The most extensive trade in this article is carried on at Genoa and Leghorn. The manner of fishing for it is every where nearly the same. Boats properly prepared with men, nets, &c. are sent to a part where beds of Coral are thought to exist; a coarse net, with two rafters tied across, with leaden weights attached, is let down, and when the Coral becomes entangled is drawn up again. The number of men and boats required to assist depends upon the weight, and accidents frequently occur in consequence of the rope breaking when pulling it in. It is principally used for ornaments, and the art of cutting it has arrived at great perfection in this country. (20)

CEDAR.

This noted evergreen is a native of Mount Lebanon, and grows in Syria, Phœnicia, &c. The wood is very aromatic, and yields an oil famed for preserving books and writings; it is also considered proof against the putrefaction of animal bodies, and

Digitized by Google

is therefore used for embalming. Moulds for black lead pencils are made from it, and cabinet makers use it for various articles. It is a preventive against moths and worms, and is frequently employed as a guard against those destructive insects. (21) An imitation is sometimes made by dyeing wood, which may easily be detected, from the absence of the fragrant scent. Solomon's noted Temple, spoken of in Scripture, was made of this wood, as also many of the ancient temples dedicated to the Gods. It is of too dry a nature to be fastened with nails, consequently pins of the wood are generally substituted. The White Cedar forms a variety of this tree, and lumps of a dry resin, called Olibanum, or Frankincense, are gathered from the bark. It is but little cultivated in England, which is to be regretted, as its spreading branches would afford a pleasing shade to many barren hills.

COPPER.

A metal, frequently found in a native state, in many parts of Europe, particularly in England, Scotland, and Wales. It is the finest of the imperfect (22) metals, and easily unites with other metallic substances. The ores vary in appearance, some having a shining grey lustre, resembling iron,

Digitized by Google

some are black, also ruby and brick red; the richest are a golden yellow. One sort, from its beautifully variegated colours, is termed Peacock Copper. There are several easy methods of determining the purity of the ore, one of which is by placing a small piece upon charcoal, with Borax, (23) which by aid of the blow-pipe will quickly melt, and if the ore be rich, it will be reduced into a bead of Copper, leaving the Borax green or red, and sometimes both. The smell emitted from it when heated or rubbed is unpleasant, as is also its taste. It is heavier than iron or tin, but lighter than gold, silver, or lead. It continues malleable in a red heat, and extends in it more easily than when cold. Powdered or in filings it produces a blue or green colour when thrown across a flame, and this renders it useful in fire-works. (24) It is considered poisonous when taken internally, but not so dangerous as arsenic, being more easily dissolved, and to prevent any evil consequences arising from its use in various culinary articles, the vessels made of it are always secured from its pernicious qualities by being covered inside with a thick coat of tin. It is easier to purify than iron. Several tons of Copper are procured from water running through veins of the metal, which becoming strongly impregnated with it, are secured by pieces of old iron being thrown into reservoirs made to receive the running stream. The iron is

Digitized by Google

dissolved by the vitrolic acid of the spring water, and the Copper is precipitated (25) in its metallic, form, in the place of the iron. When mixed with tin, Copper produces Bell-metal; in less proportion, Bronze; with Nickel, Petit Or; with Zinc, Brass, Pinchbeck, &c. according to the proportions. (26)

COPPERAS.

A name given to Green Vitriol, particularly to that of iron. It is principally employed in dyeing wool and hats black, in tanning, &c.

CLOVE TREE, OR CARYOPHYLLUS.

A native of the Molucca Islands, and principally cultivated in Amboyna. The bark of the tree resembles that of the olive, and the height and leaves of the laurel. At the extremity of its numerous branches are the cloves, which are the flowers before their expansion. They change colour in the following gradations, being first white, then green, and lastly red, when they become hard, and may be called Cloves. In drying they assume a yellow colour, and when ripe become brown, when they are shaken off the trees, upon cloths spread under for the purpose of receiving them, and they are then further dried, either by the sun, or by the

Digitized by Google

smoke of the bamboo cane. Some few are left upon the tree, which in time falling off, produce new plants, but these do not bear until they are eight or nine years old. No verdure grows under these trees. They possess more oil than any other plant. In medicine this spice is frequently used, and by some it is considered an indispensable ingredient in almost every dish. The Dutch frequently practise a little deceit in the sale of Cloves, by suspending them in a bag for several hours over a vessel of water, which adds many pounds to the weight.

COBALT.

The ores of this semi-metal consist of several varieties, some are rich in colouring matter, others too poor to pay the expense of working. The ore is generally impregnated with a considerable portion of arsenic, and contains some copper and silver. Its colour is sometimes of a greyish hue, frequently of a peach-blossom, or dark and earthy, according to its mixture with other metals. It rather resembles steel. It is found in clay slate in Cornwall, and in the alluvial (27) soil in Cheshire, combined with copper, manganese, and lead. It is difficult to calcine, and the calx is of a deep blue, which melted with borax, or potash, and silicious (28) sand, affords the blue glass called Smalt, (29) and

Digitized by Google

gives the same colour to china and earthenware, and is also used in enamel painting. The ore of Cobalt may be easily distinguished from other arsenical ores by this last property, as also that of affording the Sympathetic (30) Ink. These ores are met with in many parts of Europe, but seldom or never in a native state. The Chinese and Japanese formerly excelled in the colour used for painting their porcelain, and it is supposed they had mines of Cobalt, from which they procured it, but those being now exhausted they use instead of it the Saxon Zaffre, which is the oxyde (31) of Cobalt.

CHARCOAL.

A kind of artificial coal, made from half-burnt wood; it is of great use for fuel to many manufacturers, where heat is required without flame or smoke. In general, the quantity of Charcoal afforded by different kinds of wood, offers a tolerably accurate criterion whereby to judge of their durability. Those most abundant in Charcoal and earthy matter are the most permanent, while those that contain the largest proportion of the gaseous elements are the most perishable. Among our own trees, the chestnut and the oak are the most permanent, and the chestnut affords rather

Digitized by Google

more carbonaceous matter than the oak. It was much esteemed by the Romans, and the art of making it is very ancient. The vapour arising from Charcoal burning in a close room often proves fatal, or otherwise severely injures the constitution. It is used to polish brass and copper (which have been first thoroughly cleaned with pumice stone), by mathematical instrument makers, engravers, and frequently by artists to trace drawings, and in many chemical experiments.

COFFEA, OR COFFEE TREE.

An evergreen, which would grow to the height of 16 or 18 feet if permitted, but for convenience in procuring the berries is never suffered to reach more than 5 or 6; the leaves resemble those of a laurel, and the fruit a cherry. It is cultivated in Arabia, Turkey, Persia, and the Indies, also in America, but the production of the latter country is considered very inferior to that of the former. When red, the berries are gathered, and undergo a variety of preparations in a mill, before they appear in those beans, from which, when roasted and boiled in water, we have a most grateful beverage. The tree requires five years growth to arrive at a state of perfection. Sometimes it is propagated from the berry, but more frequently from saplings, and it is cultivated in hot

Digitized by Google

houses in Europe, where it has a very pretty appearance, the flowers being perfectly white and fragrant. It was first introduced in Europe in 1652.

COAL.

A black, inflammable, sulphurous matter, used for common fuel, and consequently of the utmost importance in every order of society. There are various kinds, of different qualities, which, as they mix under ground, form other varieties, a mine being rarely worked containing only one kind of coal. They are used in manufactories according to their quality, some burning without smoke, some emitting a greater heat, and others burning with a clearer flame. Pit, Culm, Slate, Kilkenny, Bovey, and Cannel Coal are among these varieties; this last, being very hard and easily turned and polished, is frequently used in imitation of Jet, to which it bears a strong resemblance; it was employed by the Romans for toys and ornaments, if it be their *lapis ampelites*, as is supposed, but they appear to have been ignorant of the use of Coal for fuel. It is found in almost every part of Europe, and in most counties of England, particularly the Northern. Although it appears to have been known to the primeval Britons (whose curiosity was excited to the discovery, by fragments constantly brought

Digitized by Google

down by the current, particularly round Manchester), a license for digging it was not granted until the reign of Henry the Third, when the inhabitants of Newcastle obtained one from that King. Coals were not generally used until the reign of Charles the First, at which period a chaldron was obtained for 17s. Pit Coal burnt under earth, and the cinders quenched, form coke, much used in smelting ores, and in other metallurgic processes.

COCOA, OR COCOS.

A tree, growing in the hot climates to the height of 60 feet and upwards, bearing very large nuts, which furnish both food and beverage of an agreeable flavour; the former from the kernel, and the latter from a milky liquor contained in them when ripe. It is of infinite use; for besides the pleasant shade it affords, its immense leaves are convertible into baskets, brooms, nets, mats, and a great variety of domestic articles. The shell of the nut forms drinking utensils, and is frequently employed as such, cut and ornamented with silver, in this country. From the bark very excellent cordage is made. This tree is supposed to be a native of the Maldives, and some of the East Indian Islands, thence to have been transported to America, where it now flourishes.

Digitized by Google

CHOCOLATE, OR COCOA, OR CACOA.

A kind of paste, prepared from the nut of the Chocolate tree, which is thus described:—"In all the French and Spanish Islands and settlements in the warmer parts of America, this tree is carefully cultivated. This was formerly the case also in Jamaica, but at present there are only a few straggling trees, as monuments of indolence and bad policy. This tree delights in shady places and deep valleys, and seldom grows above twenty feet high. The leaves are oblong, large, and pointed, and the flowers, which are small and pale red, spring from the trunk and large branches. The pods are oval and pointed, and the seeds or nuts are numerous and curiously placed in a white pithy substance. These nuts being gently parched in an iron pot over the fire, the external covering easily separates. The kernel is levigated on a smooth stone, and with the addition of a little Arnotta and a few drops of water, it is reduced to a mass, and formed into rolls of one pound each." The Indians formerly prepared it by roasting in earthen pots, then cleaning away the husks and bruising it between two stones, and afterwards forming the cakes with their hands. The Spaniards improved this method, but the objection to their preparation of this paste is the addition of a great quantity of

Digitized by Google

cloves, cinnamon, and other drugs. The French also mix cinnamon and vanilla, but in smaller proportions, and very rarely cloves. In England only vanilla is added. The ready made paste is prohibited to be imported from beyond the seas, and that made in Great Britain pays an inland duty. When properly prepared it is an excellent beverage for weak stomachs, as it is both nourishing and wholesome, but its solution requires great care, for if heat be applied too suddenly, the oil will separate and coagulate. Weak Chocolate is sold under the name of Cocoa, and when deprived of its oily particles it is called Broma, both of which are considered nutritious for invalids. Before the introduction of money among the Americans, the nuts or almonds of Cocoa were of such universal consumption (Chocolate being the favourite drink of persons in every rank of life), that in the market they were received in return for different commodities, and the value of what one wished to dispose of, was estimated by the number of nuts which might be expected in exchange for it.

CORK.

The tree which furnishes from its bark the useful commodity called Cork, is a species of large oak, growing in Italy, Spain, and Portugal, generally

Digitized by Google

to the height of thirty or forty feet. Every two or three years an incision is made from the top to the bottom of the trunk, and also at each end, when the bark, which by that time is partly pushed up by another growing underneath, is easily removed; it is then unwarped by a fire, pressed with weights, dried, and put into bales for sale. If the bark were allowed to remain a longer period, it would peel off of itself, and be spoiled. It is employed in England for soles to shoes, slippers, &c. but principally for stopping bottles. In Egypt coffins are made of it, which being lined with a resinous composition, preserve dead bodies from corruption for a considerable length of time. The Spaniards line stone walls with it, which renders them warm and excludes the damp. When burnt it makes a colour used by painters, called Spanish Black. It is cultivated as a curiosity in England, and the bark and fruit are used medicinally. It is employed in the construction of life-boats, and manufactured into jackets to preserve buoyancy in cases of accidents at sea.

COPAL.

A resin, obtained from the concrete juice of a tree growing in New Spain. It is brought here in irregular lumps, differing in colour from yellow to

Digitized by Google

brown, and sometimes white, varying in appearance from transparent to opaque. It has been frequently considered a mineral bitumen, resembling Amber, it differing both from regular gums and resins, from its being neither soluble in water nor in spirits of wine, nor is the oil extracted from it by distillation. A solution may be obtained in essential oils, but not in expressed (32) ones, and it will also dissolve in linseed oil, which solution diluted with spirits of turpentine, makes a clear, durable, and beautiful varnish, when properly applied and dried. Paintings, tea-boards, snuff-boxes, &c. are generally improved by its use. The smell from Copal is very agreeable.

CAYENNE, OR GUINEA PEPPER.

A production of South America, growing very plentifully in the vale of Arica, whence an immense quantity is imported. The tree, which bears the fruit at the division of the branches, attains the height of four or five feet, and is a species of Capsicum. It is one of the most heating spices that we have, and in a powdered state is almost a constant companion at the table. It is sometimes used medicinally. It derives its name from Cayenne, of which place it is a native.

Digitized by Google

CHAMOIS.

A kind of leather, prepared from the skin of a goat, bearing the same name, and wild on the mountains of Savoy, Piedmont, the Pyrenees, &c. It is either dressed with oil or tanned, and is esteemed for its softness and warmth; it will bear soap upon it without injury. There are many imitations of it made from the skins of the common goat, kid, and sheep.

COCHINEAL, OR COCCUS CACTI.

A small insect, from which a valuable and beautiful red dye is extracted. It is bred in America, principally in Oaxaca, in New Spain, where there, are plantations of the Nopal, or Indian Fig Tree, upon the juice of the leaves of which they entirely subsist. Great attention is required to preserve these little insects from being devoured by birds or worms. The method of killing them is either by hot water, fire, or the rays of the sun; the last mode appears the best for preserving the colour, as from their inside the red dust or dye is procured; they are afterwards dried and sent to Europe.

THE CINNAMON TREE, OR LAURUS.

A species of Bay tree, and a native of Ceylon; it grows to the height of 20 or 30 feet, and is covered

Digitized by Google

with a bark, the outside of which is of a greyish brown, and the inside inclined to red. The blossoms have an agreeable smell, and grow in large clusters at the extremities of the numerous branches. The fruit is something similar to an acorn, but not so large. The under bark separated from the tree constitutes the cinnamon; it is taken in the spring, and cut into thin slices, which, being exposed to the sun, curl up in drying. The spice is only in perfection when the tree is three or four years old. By boiling the seed, an oil is obtained, which swims at the top of the water and takes fire; this, when cold, hardens into a greenish white substance, from which candles are made, and reserved for the use of the King of the Island of Ceylon. The spice is fragrant, and though poignant, is pleasant to the taste. The genuine is fine, smooth, and thin, of a red colour, inclined to yellow, and brittle. It is frequently mixed with the Cassia Bark, but may easily be distinguished from it, by its breaking into splinters, and by its rough and aromatic flavour, while the bark breaks very smoothly. Distilled, it gives a simple and spiritous water, and an essential oil. It requires to be kept perfectly dry. The bark from the small branches is superior to that from the large. It now thrives in Jamaica, where it was introduced by Admiral Rodney, who took the plants from a French ship which he captured.

Digitized by Google

CHALK.

The name of a white earth, found in France, Norway, England, (33) &c. but originally discovered in the Island of Crete, whence its Latin name *Creta*. There are two sorts of Chalk, a hard dry kind, considered preferable for lime, and a soft unctuous sort, which easily dissolves with rain and frost, and is therefore best for lands, upon which it is used as manure. The method of obtaining it in Kent is very easy, it being found on the sides of the hills, much nearer the earth than is generally the case. After undermining a part, the workmen dig a trench at the top, which they fill with water; in the course of a night this soaks through, when the mass falls down. In other parts the depth at which it is found renders the aid of buckets necessary. It is used in medicine, and also in cleaning and polishing metallic or glass utensils, under the name of Whiting. (34) The black and red Chalks used by painters, are varieties of earths. The Black being supplied chiefly from Italy or Germany, though sometimes from England. This appears to be quite different from the common Chalk, and rather of the slaty bituminous sort. It is found in different sized pieces, and generally flat; whilst in the earth moist and flaky, but when dried, hard and light. The red Chalk is an indurated clayey ochre, (35) and is

Digitized by Google

brought from Germany, Italy, Spain, &c. but chiefly from Flanders. It is very heavy and hard, and of a fine and even texture. No kind of Chalks are affected by acids, but the common Chalk melts easily with flint and alkali, into a colourless transparent glass. Chalk has not been found in any part of South America or Africa yet explored. It appears to be confined to the North of Europe and the Crimea. The decomposition of pyrites in Chalk, produces sulphate of lime, and in aluminous slate, alum. The substance generally called French Chalk, is a genus of the Magnesian order of earths, called also Steatite, or Soap earth, a mineral production, and principally found in Cornwall. It has the same property as Fuller's earth, and is very much used in extracting grease. The ancient Cimolia Purpurescens is supposed to be the same article. (See *Cimolia.*) It is generally of a white or grey colour, of a firm and hard texture, its surface smooth and glossy, and soft and greasy to the touch.

CAMPHOR, OR CAMPHIRE.

A solid concrete juice, extracted from the wood of the Laurus Camphora, a tree growing in Sumatra and Japan, but it may also be obtained from various vegetables, such as peppermint, &c. When

Digitized by Google

pure, it is very white, pellucid, and rather unctuous to the touch, of a bitter taste, and fragrant smell. It is of important use in medicine and the arts.

CASSADA *(See Tapioca)*.

CITRON.

The fruit of the Citrus or Citron tree, of which there are several species, some bearing sour fruit, some sweet, &c. The principal are the Medica, or Citron tree, the Lima, or Lemon tree, and the Aurantium, or Orange tree. The fruit of the Citron is seldom used in this country, except in a candied state; the best is brought from Madeira. Of the two other species there are numerous varieties, both of which flourish in our climate, and are considered elegant evergreens. (36)

CARAWAY, OR CARUM.

A seed, principally used in confectionary, and sometimes medicinally. The plant is biennial, rising from seed one year, flowering the next, and dying soon after the seed ripens. In many parts of Britain it grows naturally.

Digitized by Google

CIMOLIA.

Cimolia Alba is the officinal name of the earth of which tobacco pipes are made, and is found in many parts of England; the colour of that from the Isle of Wight is most esteemed. It is a dense, compact heavy earth, of a dull white colour. There is also another kind, called Cimolia Nigra, which although of a dark lead colour, burns perfectly white. This is found principally in Northamptonshire, where it is manufactured into tobacco pipes. The Cimolia Terra, a valuable medicinal earth used by the ancients, but which is now supposed to be our pipe clay and Fuller's earth, was found particularly abundant in the Island of Cimolus, (37) whence its name. From the same place there was another variety of this earth, called Purple, and this was doubtless our Steatite, or Soap earth.—(See *Chalk*.)

CLAY.

Clay, in a general sense, signifies earth, weighty and compact, stiff and ductile, when moist smooth to the touch, not easily breaking between the fingers, nor readily diffusible in water; and when mixed not subsiding from it. It shrinks in a remarkable degree in drying. There are many species of Clay used in manufactures, as pipe clay, potters' earth, porcelain clay, brick clay, &c. &c.

Digitized by Google

DATE.

The fruit of the Phœnix, or Great Palm, or Date tree, a native of Africa and the Eastern Countries, where it grows to the height of from 50 to 100 feet. There are different ways of preserving the fruit, but that is esteemed the finest which is not pressed, but moistened with the juice of other Dates, with which it is packed; the best Dates are brought from Tunis. The shape of the fruit is similar to that of an acorn; under a thin yellow skin and a pulp of a sweetish taste, is a long hard kernel, with a furrow from top to bottom. Almost every part of the tree is of essential service. The wood is very durable, and the Arabs strip off the bark and eat the substance which lies in the centre. The young leaves are eaten, and the old ones dried and made into mats, &c. From the sides of the branches arise filaments which are converted into ropes, &c. A milky liquor is drawn from the tree. The Egyptians make a conserve of the fresh fruit, and when the stones have been either bruised or softened in water, they are given to the camels for food.

DIAMOND.

The hardest and most valuable of all gems, resembling, when pure, a drop of the clearest water, and extremely brilliant, as the rays of light,

Digitized by Google

instead of passing through as in Crystals, &c. are refracted to the surface. It is a genus of earths, of the siliceous kind, and though diamonds are generally white, they are sometimes tinged with colour, by the mixture of some metalline particles. They are only found in the East Indies and in Brazil; those from the latter place are esteemed the finest. There are but few mines and rivers from which they are drawn, and the manner of obtaining them, varies but little. When a place is fixed upon to dig for them, a pit is formed at a short distance from the selected spot, of considerable depth, and the earth carefully removed to another pit, previously dug, sufficiently deep to procure water, with which the earth is washed; afterwards it is dried, sifted, and thrashed; the diamonds are then searched for by the hand, in doing which, thousands of every age and sex are employed. The Diamond being harder than any other stone, can only be cut and polished by its own substance, and it easily cuts through the thickest glass. Brilliant is a term given to a Diamond, the top of which is cut flat instead of pointed. The term, Cornish Diamond, is given to a Crystal found in the Tin Mines of Cornwall.

EMERY.

A rich iron ore, the common kind of which is found in great abundance in Guernsey, Tuscany,

Digitized by Google

and many parts of Germany, also in some iron mines in England. It is hard, heavy, and of a brownish red on the surface, but when broken it is of a bright iron grey, spangled with glittering specks. There are three kinds, first the Spanish, found in the gold mines of Peru; this species usually contains some small grains of gold, in consequence of which the exportation of it is forbidden; it is sometimes, but incorrectly, supposed to be the metal called Platina. The second is the Red Emery, from Denmark and Sweden; and the third is the common sort before described; this last is the only kind in use for polishing and cutting iron and steel works, glass, marble, and all precious stones, except diamonds, upon which it has no effect. The hardness of its nature renders it difficult to be reduced to a state of pulverization, this is however effected by mills, invented in this country, for the purpose, and when reduced to this state, forms a considerable article of exportation. When fused with lead or iron it hardens those metals, and is said to increase the weight and heighten the colour of gold.

FULLERS' EARTH.

A species of clay, brown, dense, and heavy, of a rough and dusty surface. When thrown

Digitized by Google

into water, it increases in size, and subsides into a fine soft powder. The Fullers' earth of England is much superior to any yet discovered abroad, and is used in scouring cloths and stuffs, and in cleansing and preparing wool, as it imbibes the grease, an essential quality in such preparations. The largest quantity is dug from pits in Bedfordshire, where it lies under beds of sand several feet deep; it is also found in many other parts of England. It is frequently substituted for soap in domestic use, as well as in Fulling, being of equal efficacy and much less expense.

FLAX, OR LINUM.

An excellent vegetable commodity, the cultivation of which proves of great advantage, as almost every part of it may be rendered useful. Thread, from which is manufactured all kinds of linen cloth, is made from the bark of its stalks; and from the seeds the linseed oil is expressed, useful in painting, &c. and sometimes employed for feeding cattle. This has also been, in times of scarcity, taken as food, both in Asia and Europe, although it is neither agreeable nor wholesome. Its seeds are frequently used as an anodyne, and are taken internally in many medicinal cases. Flax thrives most on ground

Digitized by Google

newly broken, and is cultivated in fields, and generally blossoms in the month of July. Lincolnshire and Somersetshire are the counties where the greatest quantity is raised; the Dutch seed is preferred to any other foreign kind. There are various processes observed previously to its being manufactured into linen. After the weeding and pulling, it is rated or steeped in water, to loosen the rind from the stalk, and when this is done it is dried in the air. Great attention is required that it be not left too long in the water, which would render the thread rotten and useless. In some parts of Germany it is exposed to the air and rain, instead of rating, and this is termed dew ripening. The separating the seed from the stalk takes place before it is rated, by passing the flax through an iron comb, the teeth of which are too small to admit the heads, and they are consequently pulled off. The seeds are sometimes beaten out in the field and afterwards sifted. Many attempts have been made to render flax finer and softer, and in Ireland its texture has been much improved by boiling it in sea water, with unslacked lime and potash. Flax may also be considered a manure, as an indifferent soil will be greatly enriched by its being spread upon it, or even sprinkled with water in which flax has been immersed. Both hemp and flax were first planted in England in the reign of Queen Mary.

Digitized by Google

FIG.

The fruit of the Ficus, or Fig tree, growing principally in Turkey and India. There are several species of this tree; the Carica is the common kind, and is frequently cultivated in this country. The Sycamore, mentioned in Scripture, is another sort, and is very common in Egypt, but the most beautiful is the Banian, or Indian Fig tree, a native of the East Indies, where it grows to an immense size, and from the number of years it is exempt from decay is regarded by the Hindoos as an emblem of the Deity. The following lines contain a beautiful description of this justly admired tree, from Milton's Paradise Lost, Book 9:—

——————"There soon they chose
The fig tree; not that tree for fruit renown'd,
But such as, at this day (to Indians known
In Malabar or Decan), spreads her arms,
Branching so broad, and long, that in the ground
The bended twigs take root, and daughters grow
About the mother tree; a pillar'd shade
High over-arched, and echoing walks between:
There oft the Indian herdsman shunning heat,
Shelters in cool, and tends his pasturing herds
At loop-holes cut thro' thickest shade."

Digitized by Google

GUM.

A vegetable substance, which oozes through the barks of certain trees, and concretes upon the surface. Its characteristic properties are its easy solubility in water, and its insolubility in alcohol, thus differing from resins. Gum possesses no peculiar smell or taste, and burns in the fire to a black coal without melting or producing flame. The Gums are Gum Seneca, Gum Arabic, the Gum from cherry and plum trees, and such like, which are divided into classes, the former being termed genuine, the latter impure, as they contain a portion of resin. Gum Arabic is obtained from the Mimosa Nilotica, or Egyptian Acacia, growing in Africa, from which tree it exudes in a liquid state; this, by exposure to the air, assumes a state of solidity, similar to the gum on our trees. It is collected twice a year, and generally imported from Barbary in large casks. The pale yellow is most esteemed. Its principal use is in medicine, and it has been known to be the only food of a caravan for some considerable length of time. Gum Seneca very nearly resembles the former, and is probably the production of a similar tree; its virtues are the same, and when used medicinally it is generally mixed with it. Dissolved in milk the negroes frequently feed upon it, and dyers and artificers

Digitized by Google

consume a great quantity of what is annually imported here. Gum Ammoniac is brought from the East Indies and extracted from a plant growing in Asia and Africa. This Gum is said to have been employed in sacrifices by the ancients for incense: the best is in dry drops, yellow outside and white within, easily fusible, rather bitter, and of a very sharp taste and smell. Pliny called the tree Metopion, which he described growing near the temple of Jupiter Ammon, whence it derives its name. There is a great variety of Gums, but they are pretty generally of the same description as those already named. Among them is Gum Manna, from an ash in Italy; Gum Guaicum, or Lignum Vitæ, from Africa and America; Gum Aloes, &c. Gum Sandarach, a Gum resin, is obtained from a species of Juniper tree, from which pounce is made. It is brought here in small transparent pieces, of a pale yellow colour, very brittle and inflammable. The Lentiscus, a species of Pistachia tree, growing naturally in Spain and Portugal, yields the Gum Mastich, but the best of this kind is obtained from the Orientalis, or Mastich tree of the Levant. This Gum is used in fumigations and varnishes, and is considered to strengthen the other Gums when mixed with them. Asa Fœtida is a Gum obtained from a large plant in the East Indies, and possesses a sharp taste and very offensive smell. The Asa of

Digitized by Google

the ancients was an odoriferous and fragrant Gum, and was therefore termed Asa Dulcis. Besides the use of Gums in medicine, they are of considerable service in the arts.

GRANITE.

A genus of stone, chiefly composed of large crystals of Quartz, Felspar, and Mica, distinctly or confusedly aggregated, of great hardness, and found in almost every country, varying in size. From its well known durability, Granite is much used for public buildings, wherever great strength is required, as for columns, statues, bridges, &c. and they have been known to withstand the mouldering effects of the iron hand of time for upwards of 4,000 years. There are three distinct species, first, Granite, composed of Felspar and Quartz, called Moor stone in Cornwall, and by some named Porphyritic Granite; it differs much in the proportions of its constituents, and frequently contains Hornblende, and the finer variety resembles Sienite; Garnets, Tourmaline, and Schorl, are frequently imbedded in it. The grand head of Memnon, in the British Museum, and the colossal figures in Egypt, are of Sienite. The Red Granite is the second sort, and is so called when the Felspar predominates; it is of a red colour, variegated with

Digitized by Google

black and white, common in Egypt and Arabia, and also in Scotland. On the Isle of Icolmkil the cathedral is built of this kind. The third sort is the pale whitish Granite, diversified with black and yellow, and found sometimes in strata, but more generally in loose nodules. It takes a good polish, and the Italians still use it, as the Egyptians formerly did, in large ornamental architecture. The Malvern Hills,—the high mountains of Scotland,—the Alps,—the Ridge in Brazil,—the Cordilleras,—and the Himalayan chain in Asia, are of Granitic formation.

GYPSUM, OR PLASTER STONE,

Is Lime combined with Sulphuric Acid, and is very abundant in Derbyshire and Nottinghamshire. Various species are found in Saxony, Spain, and many parts of Europe. This substance differs from calcareous earth in being more friable and looser, being easily reduced into a powder by heat, which readily concretes into a mass with water. Indurated Gypsum is the species commonly called Alabaster. (See Alabaster.)—The Gypsum of a scaly texture burnt, forms Plaster of Paris, and its principal use is, as a material for small statues, busts, mouldings, &c. There are many other kinds, some used as Alabaster, being capable of receiving a fine polish.

Digitized by Google

Substances of a Gypseous nature are found in various parts of England; and in Derbyshire a semi-pellucid solid Alabaster is found. Gypsum may easily be distinguished from Marble, from its being sufficiently soft to be scratched by the nail.

GOLD.

The most valuable of all the metals, being the heaviest and purest, as well as the most ductile and malleable. It is more elastic than lead or tin, but less so than iron or copper, incapable of rust, and not sonorous; it becomes hard and brittle by hammering, but resumes its ductility on being gently heated. Gold is found in some parts of Europe, but it is generally supplied by North and South America, also by China, and the coast of Africa. Gold is usually obtained by raking away the alluvial soil from the rock, and in procuring the pure metal the rough ores of Gold are first broken in the stamping mill and washed, by which the lighter and earthy parts are separated. They are then submitted to the action of mercury, which dissolves the Gold, and being afterwards disunited by distillation, leaves the metal in nearly a pure state. A considerable quantity of Gold dust is sold in Africa, and the negroes frequently bring in the

Digitized by Google

hollow of a quill their scanty earnings to sell. It is sometimes adulterated with Pyrites (39) or with Brass filings, and many merchants have suffered heavy losses from their inability to detect the deceit. Some of the negroes make a trade of assaying it, and are called Tryers. Gold is frequently found native, though it is generally alloyed with either silver, copper, or iron, and sometimes with all three. The usual size of the pieces varies from a pea to a bean, though larger masses have occasionally been found. Money was first made of this metal at Argos, A.M. 3110, and it has ever since continued one of the current specie of our realm. It is much employed in the manufacture of trinkets and ornaments, but its most general application is that of gilding.

GLUE.

A cement used among artificers, of a tenacious viscid matter. There are various kinds made from different parts of animals. The common Glue is made from the skins or sinews, but the very inferior kind used by carpenters, joiners, &c. is generally prepared from scraps of skins and the sinews of legs. There is also a Glue made from gloves and parchment, which is more properly called Size, and is, from the superiority of the materials, of a better

Digitized by Google

description than the former. Glue is made by steeping the parings in water, and boiling them to the consistence of a jelly. This when in a heated state is separated from any impure particles by being passed through osier baskets, and becomes purified by standing; it is then again dissolved and boiled, and lastly poured into flat vessels, whence it is taken, cut in square pieces, and dried by being suspended in a net. Glue is also made from different parts of fish, amongst which class the Huso holds the highest rank. *(See Isinglass.)* Glue improves by keeping; the best of the common kind is imported from Ireland. This substance when good is so adhesive that pieces of wood joined with it are with difficulty separated.

GIN, HOLLANDS, OR GENEVA.

A malt liquor, distilled a second time, with the addition of Juniper berries. These berries were formerly added in the grinding, and the flavour obtained from them in the spirit far excelled the present, which is too frequently produced by distilling the spirit with spirits of Turpentine. The flavour is similar, but it possesses none of the valuable properties of the former.

Digitized by Google

Digitized by Google

's follows :—
ie ounce of
. coal, to a
.1 a wooden
·ier until it
g through a
these being
large quan-
was first in-
·upposed by
'lonk, who
accidentally
losion : but
iz, is known
and he also
struction of
been soon
were shortly
s of cannon
ey were in-

eeable of the
ne degree of
it is highly
s of Hop, of

Digitized by Google

GINGER, OR AMOMUM, OR ZINGIBER.

A native of the East and West Indies, where it grows naturally and without culture. The root when dried and broken is of a pale yellow colour, of the tuberous kind, knotty, crooked, and irregular; it is hot and pungent, but the least acrimonious of all the foreign spices. The Indians are extremely fond of it, eating both the young shoots of the leaves, and the roots themselves, mixed with their salads and broths. It makes an excellent sweetmeat, preserved when green with sugar, and is a great stimulant suited to stomachs of weak digestion. It is very valuable consequently in many medicinal cases, and a strong infusion in water taken frequently in the course of the day, has afforded relief in many cases of gout. In Jamaica it is sometimes used in baths and fomentations with success.

GUNPOWDER.

A granulated composition of salt-petre, sulphur, and charcoal; from the former it derives its strength, from the sulphur its inflammatory matter, and the latter prevents its too sudden extinction. On coming in contact with fire it immediately rarefies or expands with great vehemence, by means of its elastic

Digitized by Google

force. Dr. Shaw's recipe for making it is as follows :— "Reduce four ounces of salt-petre, one ounce of brimstone, and six drachms of small coal, to a powder, beat it in a stone mortar with a wooden pestle, wetting the mixture with water until it forms a uniform paste, which by passing through a wire sieve is reduced into granules ; these being carefully dried become gunpowder." Large quantities are usually made in mills. It was first invented about the year 1320, generally supposed by Bartholomew Schwartz, a German Monk, who having mixed the materials, a spark accidentally fell into the mortar, and caused an explosion : but Roger Bacon, before the time of Schwartz, is known to have described this composition, and he also proposed to apply its force for the destruction of armies, which advice appears to have been soon made use of, as guns and cannons were shortly after invented. The first four pieces of cannon were used at the battle of Crecy ; they were introduced into ships in 1540.

HOP.

This plant forms one of the most agreeable of the strong bitters, accompanied with some degree of warmth and aromatic flavour; and it is highly intoxicating. There are various kinds of Hop, of

Digitized by Google

which the long white is most preferred. Employment is afforded to hundreds of the labouring class in the various processes of planting, dressing, poling, tying, gathering, drying, and bagging. This is a very valuable plant, but the merchants and cultivators are often subjected to very serious losses by the variety of distempers to which it is liable, arising from the variableness of the season, and the injuries derived from insects, &c. The principal use of Hops is in brewing, for the preservation of malt liquors, by which addition they are less likely to turn sour. The infusion of Hop in good beer is considered a very useful bitter tonic, which tends to strengthen the stomach and invigorate the whole frame. It undoubtedly possesses a narcotic quality, and a pillow stuffed with the dried flowers has frequently procured sleep to a patient in fever when all other efforts have failed. They were first planted in England in 1511.

HORN.

A hard substance, growing upon the heads of various animals, and a very considerable article in the arts and manufactures. When softened by heat, Horn is convertible into combs, lanthorns, boxes, &c. &c. and being capable of taking different colors by various processes, it is frequently employed in

Digitized by Google

imitation of superior materials. After being heated the Horn soon becomes sufficiently soft to be split, when it is kept open by a pair of large tongs, and again placed over the fire until it is reduced to a flat state; it is then pressed between hot iron plates well greased: this is left to cool, and soaked in water, when it can be pared to any thinness. The shavings of Horn are considered a good manure for chalky lands. By distillation an oil is obtained from this substance, called—The oil of dippel.

HARTSHORN.

The scrapings of the horn of the common male deer, very much used in medicine in various ways; as a jelly it is considered very nourishing, and the salt of Hartshorn is sudorific, and yields a penetrating spirit, very reviving in fainting fits. However, the preparation frequently used is distilled from the bones, after the oil is extracted. When this is genuine, it is more grateful to the stomach than the spirit; but its being very frequently adulterated with quick-lime renders the use of it pernicious.

HEMP.

A very valuable plant, growing wild in the East Indies, and cultivated in many parts of Europe,

Digitized by Google

particularly in England. The coarser kinds of Hemp are used in making cordage, &c. and the finer sorts are manufactured into linen, which is considerably stronger than, though not so fine as that made from flax; but it has this advantage over the latter, that the colour certainly improves by wearing while that of flax decays. In Suffolk it is particularly cultivated. A great quantity of sheeting, &c. manufactured in Russia, is imported into this country, and is highly extolled on account of its strength. This plant thrives best upon a moist soil, and is propagated from seed sown about the middle or end of Spring, and is fit for pulling about ten or twelve weeks afterwards. There are two kinds: that from which the seed is obtained in many parts is gathered before the other, and beaten out, but in some places they are pulled together. In preparing Hemp for the manufacturer, it is first either dew ripened or watered like flax, in order easily to separate the bark (which is the Hemp) from the woody part, which, after being thus loosened, can either be effected by the hand or by machinery. It is freed from any impurity by washing and squeezing. The breaking and beating are generally performed by machinery, and it undergoes a similar process to wool by being combed. The refuse of this operation, consisting of threads too coarse to pass through the teeth, is called Tow, which is frequently spun

Digitized by Google

into a kind of yarn, from which very common thick cloths are made. Thus prepared by combing, &c. hemp is sold to spinners, who reel the yarn, and lastly, it is bleached. From this article are manufactured linen, sail cloth, tape, sacking, cordage, twine, nets, &c. The seeds yield, by expression, a pure oil, and are given for food to many domestic birds, but being of a very fattening nature, they are seldom given alone. As Hemp is considered to expel vermin, it is sometimes planted with vegetables. In the Eastern climate the leaves of this plant are used like opium, and both the Russians and Polanders roast and eat them. Hemp and flax were first planted in England in the reign of Queen Mary. There is another species of Hemp lately introduced from China, which by some is considered superior to the English.

IVORY.

A hard, firm, white substance, the tusk or tooth of the Elephant, the grand consumption of which is in making ornamental articles of various descriptions. It is easily softened by aquafortis, (40) the juice of beets, (41) or by boiling with the root of mandragoras (42); and by steeping it in vinegar, or any acid, it will resume its ductile state. The Ivory of Ceylon and the Isle of Achem are of the highest value, as it

Digitized by Google

does not become yellow in wearing, like that from the coast of Africa. The tusks are generally from four to five feet long, but in some parts of Africa they grow to ten feet. The tusk is hollow to a certain extent, the cavity being filled up with a compact medullary substance, appearing to have a great number of glands in it. The carving of Ivory is brought to very great perfection in China.

INK.

A fluid of different colours, used for writing. The black is generally prepared with an infusion of galls, (43)) copperas, and gum arabic, and to some of the superior kinds, logwood, blue vitriol, and sugar candy are added. Red Ink is made of the raspings of Brazil wood, with gum arabic, white sugar, and alum. Printers' Ink is generally supposed to be a composition of lamp black (44) and linseed oil, boiled to a proper consistency. That used by copper-plate printers, differs from the last in the oil being less boiled, and Frankfort black (45) is substituted for lamp black. Sympathetic Ink is prepared in a variety of ways, but that made from cobalt appears to be superior to any other. Indian Ink, so famous in water colour paintings, is brought from China and the East Indies, in cakes or rolls, and is made of lamp black and size, mixed with perfumes.

Digitized by Google

IRON.

The hardest, most useful, and most plentiful of all the imperfect metals. It is susceptible of a fine polish, and is more capable than any other metal of having its hardness increased or diminished by chemical process. Ores of Iron present themselves in great abundance, being very generally diffused throughout the globe. It is of a livid whitish colour, inclining to grey, and may generally be detected by its action on the magnet, which, however, is not observable in some varieties until they have been heated, and the sulphur driven off. It is found native in Siberia and Senegal, but not frequently, being usually intermixed with other fossil productions. It is brought from various parts, particularly from Germany and Sweden, that from the last being considered the most valuable. The iron of Great Britain is obtained from three kinds of ores. The first is the Lancashire, which is very heavy, of a lamellated texture, a dark purple colour, and is lodged in veins like other metals. The next is the bog ore, which resembles a yellow ochrey clay, and appears to have been deposited by some ferruginous rivulets, and lies in beds of irregular thickness. The most common ore in England from which Iron is taken, is the clay Iron stone, which may be considered a deposit, and

Digitized by Google

often contains vegetable impressions. It lies in beds, and is sometimes stratified with seams of pit coal. The ores of Iron are generally calcined previous to their fusion. The best cast or raw Iron has of late been brought into a malleable state, by passing it through rollers, instead of forging it, by which process it is said to be freed from those impurities which are not discharged by the common method. Steel is Iron in a state between cast and malleable, and is usually made from the best forged Iron. When further purified it is called cast steel, and is then made into the better kinds of instruments, as razors, knives, springs for watches, clocks, &c. At Birmingham and Sheffield the manufacture of steel articles is carried to the greatest extent. It is a valuable property of Iron that when heated it is sufficiently soft to be formed without difficulty into any shape, and that it may afterwards be rendered more or less hard by plunging it into cold water whilst in a heated state, which is called tempering; the colour displayed upon the surface of the metal during the time it receives increasing heat, serves to direct the artist in tempering it. The finest steel is the Damascus, imported from Syria; also the German and Brescian. The best steel was first introduced at Sheffield by a poor man, named Waller, living in London in 1765, a galloon wire drawer by trade, who from want of small

Digitized by Google

cylinders of good steel, considered that a new fusion of it was likely to accomplish his views. This invention was quickly known, and he was deprived of any benefit arising from his own ingenuity. Iron is easily calcinable by fire, and is soluble in all the acids, even that of fixed air; it is very subject to be covered with rust, to prevent which many compositions have been made, but nothing appears more effectual than common oil. Iron is chemically employed in a variety of the arts, besides being manufactured into innumerable articles of every description; it is used by hatters and dyers, when precipitated by gallic acid, in forming a black dye, in making ink, in the manufacture of Prussian Blue, preparing leather, &c. &c.

INDIAN RUBBER, GUM ELASTIC, OR CAOUT-CHOUC.

The juice of a tree growing in South America, principally in Cayenne, the distinguishing properties of which are solidity, flexibility, and elasticity. It is soluble in the volatile oils, but remains rather glutinous after evaporation. The juice of the tree flows from the trunk, in which incisions have been made, and is collected during rain, when it exudes most abundantly. The air is supposed to thicken and harden it. It is generally formed in moulds

Digitized by Google

into various shapes. Its principal use is in removing the marks of black lead from paper, and is therefore sometimes termed the lead eater. It is much employed also in the construction of surgical instruments. It may be obtained from several species of trees; though they are all inferior to that produced from the Pao de Xyringa, or Syringe tree of Cayenne. (46) The Indians make boots and bottles of this substance, as it is impervious to water, and also a similar cloth to our sail and oil cloth.

ISINGLASS, OR ICHTHYOCOLLA.

A transparent jelly, prepared from the fish Huso, or Accipenser. The method of making it was for many years preserved as a secret among the Russians, from whom we are principally supplied, through the Dutch, who contract for it before it is made; but it has lately been allowed that the Belluga in the Muscovy rivers, and the sounds of the small fresh fish in the Caspian Sea, yield fine Isinglass, and that our lakes and rivers in North America abound with the same species as those in Muscovy. The sinewy part of the fish is dissolved in boiling water, and afterwards strained; when cold the fat is skimmed off, and the liquor again boiled to a proper consistency for cutting; it is then rolled and twisted into small pieces and suspended until dry.

Digitized by Google

This assertion has been contradicted, and it is added that no artificial heat is required for the production of Isinglass, but that with boiling water it would be glue, and therefore it is only the membranous parts of particular fish, divested of their moisture and dried in the open air. The sounds and different parts from which it is composed are taken from the fish when fresh, slit open and washed, and then exposed to the air to stiffen, and afterwards rolled. The twisting was supposed to be done originally to prevent discovering what the real substance was from which it was prepared. There are inferior kinds made from the intestines. As the frost changes the colour and deprives it of weight, it is best made in the summer; it is the basis of the Russian glue, which on account of its strength is always preferred to any other. It is considered an excellent agglutinant and strengthener, and is frequently mixed for invalids in jellies and broths; it has no smell or taste. The finest is used in making mock pearls, and in stiffening gauzes, silks, &c. and is a principal ingredient in court plaister. It forms a very durable cement for walls exposed to the changes of the atmosphere, when mixed with plaster, lime, &c. but for this purpose it is better dissolved with water acidulated with oil of vitriol. The sounds of the Cod and Ling resemble the Accipenser, and the Isinglass is extracted from

Digitized by Google

them. The fishermen in Newfoundland and Iceland split open the fish as soon as taken, and throw the back-bones and sounds in a heap; they then beat the bone upon a block, till the pockets, as they term them, come out easily, and thus they preserve the sounds entire. If, however, they have required salt to keep them good, it must all be dissolved before the Isinglass is made; it must then be perfectly cleansed from the membranes by scraping, and from the mucous matter by wiping with a coarse cloth; the oily particles are then to be absorbed by washing for a few minutes in lime water, afterwards in clear, and then dried in the air upon nets. The pieces, for convenience in exportation, are run together in rows.

INDIGO.

A blue dye, extracted from the leaves and small branches of a plant growing in Asia, Africa, and America, called Indigofera Tinctoria, or Indigo plant. This plant grows to the height of about two feet, and is propagated from seed resembling gunpowder. The plant is about two months before it comes to perfection. After it flowers it is cut every six weeks with a pruning knife, and lasts about two years, when it degenerates. It cannot be raised with any success in our climate. The genuine drug is of a dark, rich, blue colour, and when broken

Digitized by Google

Guatimala, in South America. It is used in washing to impart a blue colour to linen; also by painters, but principally by dyers. It is frequently adulterated with ashes, earth, pounded slate, &c. The substitution of Prussian Blue for Indigo, in the dyeing of woollen cloths has long been a desideratum in France; the latter being an exotic material of moderate and steady price. M. Raymond, a French chemist, began to apply himself to this subject in the year 1819, and has at length invented a process which he allows to be more complicated than that of dyeing with Indigo, but which is perfectly successful in the production of fixed tints of great beauty, and of any depth that may be required. The inventor confidently anticipates that this new process of dyeing blues will supersede the old.—Indigo made from the leaves is a choicer kind than that made from both leaves and branches. The trade is very hazardous, as the plant is often entirely destroyed in a few hours by caterpillars and other insects. The dreg is frequently spoiled in extracting the dye; the greatest care is required in gathering, as also throughout the whole process.

JET, SOMETIMES CALLED BLACK AMBER.

A black, inflammable, concrete substance, sometimes considered to be Amber, only differing in colour; it becomes electrical by friction and at-

Digitized by Google

tracts light substances, a property belonging also to Amber. It is found plentifully in England, particularly in Yorkshire, generally in detached masses; also in other parts of Europe and the East Indies. It takes a fine polish, and is manufactured into various fancy articles. Combined with proper oils it forms an ingredient in varnishes, and, mixed with lime in powder, a very durable cement.

JUNIPER BERRIES.

Juniper Berries are gathered from a shrub called Juniperus, or Juniper tree, growing in many parts of Britain, in a dry, chalky, or sandy soil; in the Highlands of Scotland, &c. There is a variety of species in Spain, Portugal, &c. These berries are chiefly used in the distilleries of Holland and Great Britain for flavouring the Geneva. The essential oil extracted from them, combined with that of nuts, makes an excellent varnish. The berries are sometimes used medicinally. The Laplanders drink an infusion of them in water; the Swedes prepare an extract from them which they eat. The Germans use the berries mixed in a sauce, as an accompaniment to the flesh of the wild boar. Grass will not grow beneath the tree. The resin obtained from this tree in a powdered state is frequently used under the name of Pounce.

Digitized by Google

KALI, SALSOLA, OR GLASS WORT.

An annual plant, growing naturally on sea coasts, and burnt to procure mineral alkali. The ashes obtained from this plant, as well as from kelp and others, are called potashes, and are of great use in the arts and in making soap (47) and glass, (48) though for the last purposes the species of Salsola called Soda is generally preferred. In Languedoc the ashes are thus procured:—when the plant has arrived at maturity, it is cut down and left to dry; it is then calcined in pits like lime-kilns, closely covered with earth, and burnt. In this way it is not only reduced to ashes, but made into a very hard stone resembling rock salt.

KELP.

A species of potash, prepared from the ashes of sea weeds, particularly from the weed called sea-wrack. After being collected from the sea shore, they are dried and stacked like hay, and then burnt in the following manner:—after the weed is cut and dried, it is placed in a cavity dug in the ground, three or four feet wide. This is set on fire, and quantities of this fuel being continually heaped upon the circle, a perpetual flame is kept up in the centre, from which a liquid like melted metal drops into the cavity beneath. When full, and the impure matter has been removed, the Kelp is brought to a uniform

Digitized by Google

consistence by iron rakes. After cooling it undergoes a second vitrification in glass houses, and becomes perfectly transparent. In Scotland and Ireland the greatest quantity of Kelp is prepared. The potash obtained from this plant is more particularly used for green glass.

KERMES, OR COCCUS ILLICIS.

Small insects, employed in dyeing red, and in medicine; they are found in abundance inhabiting a species of oak in France, Spain, and Portugal; the colour extracted from those brought from Languedoc is esteemed the finest, but inferior to the scarlet produced by the cochineal. The real nature of the Kermes was for some time imperfectly known, some considering them a fruit, and others an excrescence, as the gall upon oaks, but they were ultimately discovered to be the bodies of insects, transformed into these resemblances in the regular course of nature. Various shades of colours are obtained by different solutions.

Myriads of creatures (each too nicely small
Bare sense to reach) for thy inspection call,
In animalcula, germs, seeds, and flow'rs,
Live, in their perfect shapes, the little pow'rs.
Vast trees lie pictured in their slend'rest grains:
Armies one wat'ry globule contains.

Digitized by Google

Some, so minute, that to their fine extreme,
The mite a vast Leviathan will seem;
That yet of organs, functions, sense partake,
Equal with animals of largest make;
In curious limbs and clothing they surpass,
By far, the comeliest of the bulky mass.

THOMSON.

LAUDANUM.

A name given to different preparations of Opium, principally in a liquid form. (See *Opium.*)

LOADSTONE, OR MAGNET.

A ferruginous stone, found in iron mines, in England, China, Germany, Arabia, Hungary, and Bengal. It possesses very extraordinary properties of attraction. It is harder and heavier than iron, and varies in colour according to the countries from which it is brought. The attractive property of the Loadstone has been known in all ages. Thales, surprised with so constant an effect, ascribed to it a soul. Plato, Aristotle, and Pliny, have each made mention of this attraction, but neither they, nor any other, down to the eleventh century, or even to the beginning of the twelfth, knew that the Loadstone, suspended, or floating on water, by means of a piece of cork, always turned one and

Digitized by Google

the same point towards the north. These two properties, of attracting iron, and of turning towards the north, being known, some virtuosi repeated the experiments, by floating, in a vessel of water, a piece of iron and a Loadstone upon corks, that they might meet with no obstacle; they observed that when the piece of iron was rubbed upon the Loadstone, it acquired the nature of turning to the north, and of attracting, as Loadstones did, needles and small pieces of iron. From one experiment to another they came to the laying a needle touched by the Loadstone on two pieces of straw upon water, which they observed constantly turned to the north. They were in a fair way to the grand discovery, but had not yet attained to the knowledge of what is called the compass. But this experiment being at last applied to navigation, a poet of the twelfth century acquaints us, that the French pilots made use of a needle rubbed upon a Loadstone, which they called "la marinette." Soon after, instead of floating these needles upon the surface of the water, upon straw or cork, which the motion of the ship agitated too much, an intelligent mariner thought of suspending the needle exactly in its centre, upon an immoveable point, that it might have full liberty to play and turn towards the Pole. Another workman, in the fourteenth century, thought of laying over this needle a very light circle of pasteboard,

Digitized by Google

on which the four cardinal points, and the principal winds, were marked out, and the whole circle divided into the 360 degrees of the horizon. The little machine suspended in a box, which box itself was hung pretty nearly like the mariner's lamps, answered the hopes of the inventor, for, however the ship might change its situation, the needle always faithfully turning to the north, distinguished on the pasteboard by a *fleur-de-lis*, and the other points of the wind marked as aforesaid, pointed out the course that was held, and the winds they were to guard against. Thus, at last, the mariner's compass was invented; but after such a manner, that it is hard to decide by whom or in what nation. Yet this is certain, the English may justly lay claim to the honour of having brought it to perfection, by the manner of suspending the box which holds the needle. They say in their favour, that the names which the compass bears were received from them by all other nations, at the time that they communicated the compass to them brought to a commodious form; that it is called the Sea Compass or Circle of Mariners, from the two English words, Mariner's Compass, and from the English word box, the Italians have made their "bussola," as they change the name of Alexander to Alessandro. Others endeavour to give the honour of this invention to the Chinese, but as to this very day they float

Digitized by Google

their needle on a cork, it is without any just foundation. The Loadstone is known by the names of the Herculean stone, from its commanding iron, Lapis Heracleus, from Heraclea, where it is said to have been first discovered, and Lapis Nauticus, from its utility to mariners.

When from the bosom of the mine,
The magnet first to light was thrown,
Fair Commerce hail'd the gift divine,
And smiling claim'd it for her own;
"My bark," she said, "this gem shall guide
"Thro' paths of Ocean yet untried;
"While as my daring sons explore
"The rude, inhospitable shore,
"Mid desert sands and ruthless skies,
"New seats of industry shall rise,
"And culture wide extend his genial reign,
"Free as the ambient gale, and boundless as the main."

PYE.

LINSEED (*See Flax*).

LEAD.

An imperfect metal, of a dull grey colour, the least ductile, elastic, and sonorous of all others, and the heaviest excepting mercury, gold, and platina. It is found in many parts of Europe, in North and South America, and in the East Indies.

Digitized by Google

The ores of this metal are various and numerous; they occur in almost every rock formation, but principally in limestone; they generally contain a portion of silver, particularly those of Devonshire and Cornwall, where the most abundant is the grey variety, from which the common lead is chiefly produced. Other ores of lead are white, green, yellow, red, &c. which may generally be discovered by their weight. Lead, after it has been raised, is crushed in a mill and smelted. It is used in the construction of cisterns, boilers for chemical purposes, pipes, the covering of buildings, &c. but utensils made of this metal for domestic purposes are highly pernicious. Lead is also used in casting shot. The fumes, when inhaled into the human body, are productive of various disorders, to which the miners are particularly subject.—Red Lead, or Minium, is sometimes made from Litharge, (49) but the best is made from the metal in its pure state, which when properly melted produces the finest flint glass. The greater the proportion of Red Lead, the heavier is the glass, and the greater its power of refraction; it is, therefore, employed for the lenses of telescopic instruments, and is much used in glazing pottery.—White Lead, or Ceruse, is a Calx of Lead, made by exposing plates of that metal to the vapour arising from vinegar. It is used by painters, and in surgery. That from Venetia is esteemed the best.—

Digitized by Google

Black Lead, or Plumbago, is a genus of inflammable substances, found in great abundance in Cumberland, and in many parts of Spain. The best sort for making pencils (its principal use) is met with at Borrowdale. It is also useful in cleaning stoves, grates, &c.—Yellow Lead, or Masticot, is the ashes of Lead obtained by slow calcination, used in oil painting, medicinally, and in glazing pottery.

LOGWOOD, OR CAMPEACHY WOOD.

A wood very much used by dyers. The tree, which generally grows to the height of about twenty feet, is found in many parts of the Spanish West Indies, particularly in the bay of Campeachy. The colours extracted from it are more or less inclined to red, from lilac to violet, according to the different ingredients employed, and among the colours prepared from Logwood the black is the most durable, but they are all of a fading nature. Logwood is cut in the spring, when the bark and white sap are chipped off, and the red part or heart is reserved for sale. Logwood is so heavy as to sink in water and is capable of bearing a very fine polish. Lately it has been used in medicine.

LIME.

A white, soft, friable substance, procured from chalk, limestone, marble, and other calcareous

Digitized by Google

earths, by burning in a kiln. It is principally used as an ingredient in mortar, also as a manure for the land. There are two sorts, the magnesian and calcareous, the former of which is injurious to land, whilst the latter is highly beneficial,—the former may be easily distinguished by its slow and difficult solution in acids. It has also been successfully employed, when mixed with other things, as a medicine, but taken or inhaled in any quantity alone it has proved poisonous. Lime combined with Fluoric Acid, forms the fossil called Fluor Spar.—(See *Spar.)*

LIMES *(See Citron).*

MOROCCO.

A leather made of the skins of goats, tanned and dyed in a particular way by the Turks. The name is derived from its being invented in the kingdom of Morocco. That prepared in England is inferior, and generally made from sheep skins. Morocco leather is often counterfeited for Shagreen, but may easily be detected by the surface peeling off, whilst the genuine article remains hard.

MANGANESE.

A dark coloured mineral, frequently attendant upon iron ores and ochreous substances. Its general

Digitized by Google

appearance is earthy, brown, or black; it soils the fingers when touched, and frequently contains delicate fibres of a bright iron-like lustre. It also occurs with earthy substances, and gives the colour to amethysts, calcareous spar, quartz, and other gems. It is found in Devonshire, and in the lead and iron mines in Somersetshire, in America, and various parts of Europe. When reduced to powder Manganese becomes magnetical, which is not the case in large pieces. It melts quickly with other metals, mercury excepted, and renders copper extremely malleable when united with it. It is employed in glass works, for purifying glass from the effects of colouring substances, as it renders vitrified matters perfectly clear, and it also imparts a red tinge to glass in a state of fusion. It is employed in bleaching, and in glazing earthenware, which thus acquires a black colour.

MAHOGANY, OR SWIETENIA.

A tree growing wild in South America, and in some of the West Indian Islands. It grows very tall and straight, and is generally about four feet in diameter. The foliage is a deep green—the flowers are rather red—the fruit oval and about the size of a turkey's egg. The wood is very hard, takes a fine polish, and is used for cabinet ware of every

Digitized by Google

description. It was introduced into England in 1724, by a West Indian Captain, and given by him to his brother, who had a candle box constructed from a plank, which so pleased him that he ordered a bureau to be made of the same material, but the workmen complained of the hardness of the wood injuring their tools. The negroes raise a scaffolding round the tree before it is felled, and as they only cut it to the ground, the root, which is generally the most beautiful part, is left useless, (it requiring very laborious work to raise it) unless for particular purposes. The grain of the wood varies according to the soil. The tree growing upon rocks yields a better and closer wood than that upon the lower and richer lands, which accounts for the superior quality of some. The Spaniards have been known to build their ships of war of this wood.

MILLET, OR MILIUM.

Of this plant, a native of India, there are different species, sometimes cultivated in Britain. The seed affords food for poultry, and is highly esteemed for making puddings, being by some preferred to rice. The seed is sown in the spring, and it will ripen about August, when the plant must be immediately cut down, and the seed beaten out to preserve it from the birds.

Digitized by Google

MARBLE.

A genus of fossils, being bright and beautiful stones, composed of small separate concretions moderately hard, effervescing with, and soluble in, acids, and calcining in a moderate fire. It consists of calcareous earth, united with fixed air, and is convertible into a strong quick-lime, like chalk or limestone. It takes a beautiful polish, and is frequently stained different colours. The varieties of Marble are very numerous; the Black Marble of Flanders is most valued, and owes its colour to a slight admixture of iron. This description is found also in Derbyshire, and in the county of Kilkenny, in Ireland, beautifully marked with white spots. Fine solid marbles are found in Italy, France, Blankenburgh, Flanders, and the Western Islands of Scotland. Those discovered in Germany, Norway, and Sweden, are considered inferior. The method of inlaying Scagliola, or plaster in marble, or metals, in imitation of every kind of ornament, was invented in 1778, and is still practised.

MUSTARD, OR SINAPIS.

There are several species of this plant, three of which are natives of Britain, viz. the Alba, or White Mustard, cultivated in gardens as a salad

Digitized by Google

herb. The Nigra, or common Mustard, propagated in fields, the seed of which powdered and mixed into a paste with water is much used at table. This kind is frequently found growing naturally. A third species is the Arvensis, generally known by the title of Durham Mustard seed. This kind grows spontaneously also in many parts of Britain. Mustard seed is recommended as a stimulant to appetite and to assist digestion. By distillation with water it yields an essential oil, and besides its use in medicine, cataplasms made with the pulverized seed, vinegar, and bread, are of the utmost service in cases of fever, fixed to the soles of the feet, or applied to benumbed limbs, &c.

MACE.

The inner rind of the nutmeg, of a yellowish colour, inclined to red, about an inch in length divided into a number of filaments. It is a very pleasant, fragrant spice, and the oil extracted from the nutmeg when heated by pressure is useful for many medicinal purposes. When the nutmegs are gathered, and the first rind has been removed, the Mace is very carefully taken off with a knife, and dried in the sun; afterwards it is moistened with a small quantity of sea water to preserve the oil.

Digitized by Google

MALT.

Correctly is applied to any corn prepared in a particular manner for brewing the various kinds of beer, but its common acceptation denotes barley, prepared so as to produce by fermentation a potable liquor.

MOHAIR *(See Wool).*

MUSK.

A strongly scented substance used as a perfume, and sometimes in medicine, particularly in the East, where its properties are held in very high estimation. It is contained in a bag under the belly of the Moschus, an East Indian animal, which inhabits the highest rocky mountains, from the Altaic chain to that which divides Thibet from India, likewise in China and Tonquin, and in Eastern Siberia. The pursuit of these animals is very difficult and dangerous, as they take amazing leaps, and seek the highest points of the rocks. The Indians consider the flesh, particularly of the young ones, a great delicacy. The best and most plentiful is that imported from Thibet. Musk is also obtained from an animal resembling a fox or marten, called the Civet or Musk Cat. Several of them have been brought into

Digitized by Google

Holland from China and the Indies, and they form a considerable branch of commerce at Amsterdam. It sheds this perfume against shrubs or stones but that is considered finer which is taken from the bag. Musk affords the strongest of all odours, and it will remain good for many years. There is a plant growing in the West Indies and some parts of Africa, the seed of which yields an odour similar to that of Musk. In France and Italy the perfumers consume vast quantities of the seed, of which necklaces and other ornaments are frequently made.

MERCURY *(See Quicksilver)*.

MOTHER OF PEARL.

The shell of a muscle called Mytilas Margatifera (not of the Pearl oyster), the inside of which is found in its natural state beautifully polished, and being divested of its external lamina by the aid of aquafortis, the outer part assumes an equal lustre. The manufacturing this shell into various ornamental articles has been brought to great perfection, particularly at Jerusalem.

NITRE *(See Saltpetre)*.

Digitized by Google

NUTMEG.

A very delightful aromatic spice, growing in the Banda Islands, Amboyna, Isle of France, and in almost all the Islands of the South Seas. The Dutch monopolized this lucrative trade by circulating a report of its flourishing only in the former isles, their settlements, until it was contradicted about the year 1751. The Myristica, or Nutmeg tree, attains the height of about 30 feet, and the fruit is gathered in a green state, when the outer rind is taken off and thrown aside until it becomes in a state of putrefaction, from which springs up a sort of black mushroom, esteemed a delicacy by the natives. The next rind is the mace. (See *Mace.*) After gathering they are for a few days exposed to the sun, and then dried by the fire. The finest being selected for exportation are watered with lime water, diluted with salt water, with which they are covered, when they are heaped together until they lose their superfluous moisture by heat; they are then fit for a voyage. A most delicious preserve is made of them whole in India, and the Dutch still retain by conquest or gift almost the entire crop, as well as of cloves and cinnamon. Nutmegs have been found serviceable in many diseases, but when used to excess have produced distressing soporific effects.

Digitized by Google

OLIVES.

The fruit of the Olea or Olive tree, growing in many of the warm parts of Europe, in France, Italy, and Portugal. There are several species, but the principal is the common olive tree, which attains the height of 20 or 30 feet, and bears small clusters of white flowers, which are succeeded by oval fruit. Olives naturally have a bitter disagreeable taste, which is partly removed by the brine of aromatized sea salt, with which they are impregnated before we receive them. When intended for preservation they are gathered green, but they assume a dark red colour when ripe, and are eaten with pepper, salt, and oil. The Lucca Olives are smaller than the Spanish, and of a milder taste, but those from Provence, which are of a middling size, are most esteemed. Olives are chiefly valued for the oil which they produce, and that extracted from the pulp is the most superior. It is much used in medicine, also for soap, but never for painting, as it will not dry, and is an effectual cure for the stings of insects. The tree is often much injured by a worm peculiar to it. The wood is used by cabinet makers, as it takes a good polish and is prettily veined. The olive branch has from the earliest period been regarded as emblematical of peace.

Digitized by Google

Digitized by Google

S.A 1829

NATURE REVIEWED:

OR,

A HISTORY

Of the principal Domestic

PRODUCTIONS OF THE EARTH;

WITH AN EXPLANATION

OF THEIR

PROPERTIES AND USES,

COMPILED FROM THE BEST AUTHORITIES.

CHELMSFORD:

PRINTED BY MEGGY AND CHALK.

SOLD BY H. GUY; SWINDORNE, WALTER, AND TAYLOR, COLCHESTER; W. MEGGY, YARMOUTH; LONGMAN AND CO. BALDWIN AND CO. HARRIS AND SON, DARTON AND HARVEY, LONDON; AND BY ALL OTHER BOOKSELLERS IN TOWN AND COUNTRY.

1829.

188.

Digitized by Google

OPIUM.

The juice of the Papaver Album, or white poppy, which grows in the fields of Asia Minor, in a similar way to our corn. The best Opium is produced on the soil about the Ganges. Opium is frequently taken for the purpose of lulling pain and procuring sleep. The heads of the poppies are bruised, and the juice which flows from the incisions is collected, and afterwards moistened with water or honey, and then worked up into cakes for sale. In this country it is only taken medicinally, but it is considered as a great luxury in the Eastern parts, and is smoked in a similar way to tobacco. Opium contains gum, resin, salt, an earthy matter, and an essential oil, in which last its narcotic power has been experimentally found to reside. Our garden lettuce contains a milky juice, which, when inspissated, has the character of Opium, and contains the same narcotic quality.

OIL.

An inflammable unctuous fluid, extracted from various natural bodies belonging either to the mineral, animal, or vegetable kingdoms. Mineral Oil is that fluid called naphtha or bitumen. Another oil is obtained from the fat of animals (50) by dis-

Digitized by Google

tillation; and vegetable oils are procured by expression, infusion, and distillation. The oils chiefly consumed in lamps are procured from certain animal matters by boiling and expression. Such are the train and spermaceti oils obtained from whales, porpoises, and other fish (See *Spermaceti*). Castor Oil, so much used in medicine, is obtained from a West Indian tree called Palma Christi.

PUMICE STONE, OR PUMEX.

A hard substance, frequently ejected from volcanoes, of a white, grey, black, or brown colour. It is very porous, and so light as to float on water. It is of great utility in smoothing wood, paste board, metal, and stone, as from its harsh and brittle texture it removes all inequalities from the surface. From its resemblance to the frothy slag produced in our iron furnaces, its formation has been attributed to that kind of froth which naturally rises to the top of the melted matter in the volcanic crater. It is found in abundance in some Islands of the Archipelago, and is much used at Naples and Sicily for building.

POUNCE.

The fine powder of Gum Sandarach, frequently rubbed upon paper in parts from which writing has

Digitized by Google

been erased, in order to prevent the ink from running, and enable the writer to rectify errors. Charcoal dust is also called Pounce, and is much used by embroiderers, who mark their patterns by passing it over holes pricked in work. Pounce is also obtained from a species of juniper tree, and from the cuttle-bone (51).

PEARLASH.

A kind of fixed alkaline salt, prepared by melting the salts extracted from the ashes of burnt wood, and again reducing them to dryness, evaporating the moisture and calcining them for a considerable time in a moderately heated furnace. Pearlash is principally used in the manufacture of glass, and it requires no further preparation, except when very great transparency is required; also in bleaching. These ashes are chiefly prepared in Germany, Russia, Poland, and America. Their goodness consists in a uniform and white appearance, but they are subject to adulteration by a mixture of common salt.

PEPPER, OR PIPER

May be divided into three sorts, the black, the white, and the long. The black grows upon the Piper plant in clusters, and the fruit round the bud,

Digitized by Google

which is white, produces berries containing the Pepper corns. The fruit is first green, then red, and afterwards dark brown; it is commonly gathered in October, and exposed several days to the sun. The leaves have a pungent taste, and are strongly scented. The wood of the plant resembles our vine, and when it rises into a stem requires a prop. It is not difficult to cultivate, but must be planted in a rich soil. It is propagated by shoots, and does not produce fruit until three years. During the succeeding three years it will yield six or seven pounds, after which time it gradually declines. This plant requires a great deal of sun, and it is necessary frequently to prune its top. It is a hot, aromatic, dry spice, brought from the East Indies, chiefly from the Isles of Java, Sumatra, and the coast of Malabar. The white Pepper is prepared from the black by rubbing off the outward bark after it has been loosened by steeping in sea water, and been exposed to the sun to dry: this process deprives it of a great deal of heat; there is also a white Pepper produced on a species of the same plant, and considered nearly equal to the black. The Long Pepper is also produced on a plant of the same genus, and is used chiefly in medicine. Pepper is used for seasoning, or as a peptic, and the East Indians frequently take it infused in water to create an appetite; sometimes

Digitized by Google

they preserve it in vinegar. It is about an inch in length, brownish and rather thick, extremely pungent, and salt to the taste.

PEWTER.

A compound metal, manufactured into spoons, plates, and a variety of domestic and other articles. It is a mixture of copper, brass, and tin, but there are other compositions frequently used in the formation of pewter, viz. bismuth and antimony, in different proportions. From the properties of the ingredients forming this metal, cleanliness in the use of domestic articles made of it is highly necessary, and acids or fermented liquors should never be allowed to remain in them.

POTASS.

An alkaline salt, chiefly procured by lixiviation from the ashes of burnt wood and certain vegetables, particularly of the plant kali. That obtained from bean stalks, the loppings of trees, vines, &c. is inferior in quality. The Russian Potass is made from the wood of the oak, beech, &c. and it appears that good Potass may be made in all places where vegetable substances abound. The best is brought from Spain. It is employed in bleaching, making alum, cleaning wool, dyeing, &c. also in chymistry and medicine.

Digitized by Google

PEARLS.

Hard, white, glossy concretions, found generally in the shell of a fish called the East Indian Pearl Oyster, and in muscles, but the latter are inferior in value. They are usually round, but sometimes of a pear shape. Spring and autumn are the seasons in which the divers are employed in fishing for them. These divers descend to those parts where the fish lie, which, adhering firmly to the sides of the rocks, require to be pulled off, either with the hands of those searching for them, or with an iron rake. Having filled a net the signal is given and they are drawn up. Experienced divers will remain under water for a considerable time, during which they hold their breath, without the use of oils or any liquors, but habit alone can render them capable of doing so. The greatest danger to which divers are exposed is the becoming a prey to the inhabitants of the deep. The oysters thus obtained are put into pits prepared for them, and covered with sand; this, with the rain and sun, soon causes them to open and die, when the flesh dries up and the Pearls fall into the pit. These are sifted, after being cleaned and dried. The small or seed Pearls are sold by the ounce, and the larger ones by auction. The best are found in Asia and Africa.

Digitized by Google

PITCH.

An adhesive, gummy, resinous substance, prepared by inspissating tar, of which large quantities are prepared in Great Britain. The best Pitch is imported from Norway and Sweden; it is of a shining black colour, dry, and brittle, and is principally employed by ship-builders, as a cement or defence for wood and other substances. On account of its stimulating properties, plasters are frequently made of it for colds and coughs. In boiling the tar to Pitch an essential oil is obtained, which is used by painters and varnishers, as it possesses drying properties. There are various kinds of Pitch—among them the Mineral Pitch or Barbadoes Tar, also called Rock Oil; this is a thick mineral fluid, found trickling down the sides of mountains, and floating on the sea in America, India, &c.—Pitch-Stone or Asphaltum, a bituminous stone, found near Babylon, and used in the composition of cement, which water cannot penetrate. An oil is extracted from this substance, used as Pitch, and also medicinally.—Jew's Pitch or Asphaltos, found about Judea and the Dead Sea, employed by the Egyptians for embalming dead bodies, &c.—Pitch Blende, &c.

Digitized by Google

PHOSPHORUS.

A name generally given to bodies luminous in the dark, without emitting heat or flame. It constitutes a part of all organized bodies, whether of the animal, vegetable, or mineral kingdoms. Solar phosphori become luminous when removed from sunshine into a dark room. The flesh of salt water fish before it putrifies, and decayed wood, are spontaneously phosphorescent. The luminous appearance upon putrified fish arises from the numerous animalcula which the putrefaction has promoted, and not from the flesh of the fish. Its combination with earths and metals are called phosphurets. Many amusing experiments are performed with this luminous body, but as it will kindle into a flame by slight friction, great care is required in using it. Phosphoric Acid is composed of Phosphorus united with oxygen, and is easily extracted by calcination from bone ashes.

PARCHMENT.

The skins of sheep or goats, rendered subservient by proper preparation to the purposes of binding

Digitized by Google

books, writing upon, &c. When the wool is stripped off, the skin is steeped for some hours in a lime pit; it is then drained, stretched upon a frame, and the flesh is scraped off with an iron instrument. It is again moistened, sprinkled with powdered chalk, rubbed with pumice stone, drained, and scraped. This process is repeated a third time. The side from which the wool is taken undergoes similar operations, and when the skins are reduced to one half of their original thickness, they are rendered smooth by pumice stone. The parings are used for making glue, size, &c. The manufacture of this article is very ancient, and its invention is generally ascribed to a King of Pergamos; but it appears that prior to his reign, the Persian records were written upon skins prepared similarly to those of the present day. Before the introduction of printing (52) all the manuscripts which are handed down to us, are either upon Parchment or Vellum. Vellum is a superior kind of Parchment, prepared from young calf skins, in a similar way to Parchment, except that they are not immersed in a lime pit. A superior glue is obtained from the shreds of Vellum. On account of their durability, both are used for deeds, writs, &c. and a method has been discovered of rendering writing legible upon them when damaged.

Digitized by Google

PLATINA.

A metallic substance discovered in South America about the middle of the 18th century, and found particularly about Choco. It is of a white colour resembling silver, from which it derives its name: the diminutive of Plata meaning silver in the Spanish language. It is heavier than gold, and harder than iron, but extremely ductile, which enables it to be rolled into leaves like gold. It possesses the property of soldering without mixture—it resists the action of acids, alkalies, and sulphur—and it retains its metallic lustre without tarnishing by exposure to the air. It is very difficult of fusion, and when properly refined, its colour is between iron and silver, and without smell. As it resists the force of fire the best crucibles are formed of it, and as a mirror it reflects but one image, and is as unchangeable as glass. Copper is improved by alloying it with Platina, and brass with Platina forms a compound not liable to tarnish. Platina is generally found united with gold, quartz, sand, &c.

POMEGRANATE.

The fruit of the Pumica or Pomegranate Tree, about the size of an orange, with a hard rind, filled with soft pulp, and numerous seeds. It grows upon

Digitized by Google

a tree, the stem of which rises to 18 or 20 feet; and the branches are terminated by most beautiful large red flowers, which are succeeded by the fruit. There is another species, with double flowers, the fruit of which, as also the flowers, are used medicinally.

QUICKSILVER, OR MERCURY.

One of the perfect metals, and the only one naturally found in a fluid state. The most intense degree of cold will alone reduce it to solidity. There are two properties found in Quicksilver equally wonderful. It takes every form one wishes to give it; but it always ends by reassuming its own natural form. In the fire it rises into vapour. When it is shaken for a considerable time, it changes into dust. By being dissolved, it becomes a hard and transparent crystal; but it can always be restored to its former fluid state. It is discovered in semi-indurated clay, in sandstone, and in other earthy productions; sometimes in globules, but generally attended with a red substance. The ores from which the greatest quantity is obtained are called Cinnabar. They are of a light or brown red colour, some are dull, and others bright and shining. They are not generally distributed, but when found are in considerable quantities, as at Idria, Almaden, and Deux Ponts. Quicksilver is fourteen or fifteen times heavier than

Digitized by Google

water, and by exposure to fire it may be totally volatilized. Next to platina and gold it is the heaviest of all the other metals; and, with the exception of iron and antimony, it unites with others. Incorporated with gold, (53) it is used for gilding copper or silver, and in conjunction with tin, it is employed in silvering the backs of mirrors, &c. An artificial combination of Mercury, with sulphur, forms the beautiful pigment called vermilion. In medicine it is also used.

RUM.

A spiritous liquor distilled from sugar canes. It contains more of the essential oil of the cane, than simple sugar spirit does; and the oily flavour of Rum is asserted to arise only from the native flavour of the cane, although by some considered to proceed from the fat used in boiling the sugar. This spirit is subject to great adulteration in Britain, sometimes even with malt spirit; but when with molasses spirit, from the similarity of taste, detection is almost impossible.

RICE, OR ORYZA.

Of this plant there is only one species, called Sativa, or Common Rice, but various names are

Digitized by Google

given to the plant in its different stages. The plant is too tender to be raised in these northern countries without artificial heat. It grows upon very moist soils. The leaves of the plant are long, and the flowers blow on the top like barley; the seed which follows is disposed in clusters, each of which is inclosed in a yellow husk from which it is separated in the following manner:—It is pounded by hollow iron pestles of a cylindrical form, lifted up by a wheel worked by oxen. A person seated between the two pestles, pushes forward the Rice when the pestles are rising; another sifts, winnows, and lays it under the pestles. In this manner it is worked until freed from the chaff and husks. When clean a thirtieth part of salt is added, and pounded together, by which the Rice, formerly grey, becomes white. After this purification it is passed through a fine sieve to separate the salt from the Rice, and it is then ready for sale. It is principally brought from Carolina; it is also cultivated in most of the eastern countries, and the chief riches of Damieta consist in this commodity. It constitutes the principal support of the inhabitants of those countries. Great quantities are imported to England and other European countries, where it is much esteemed for puddings. It is considered to be a nutritious, wholesome food, if not used too soon after gathering. The

Digitized by Google

heat produced in large piles of Rice is too great to allow insects to live inside them, but it does not prevent their carrying on their destructive powers on the surface. Keeping Rice for any length of time in quantities is therefore generally attended with waste.

RESIN.

The juice of various kinds of trees or plants oozing spontaneously or by incision, differing from gums in being more sulphurous. All the various species of fir yield Resin. It has obtained different names from the trees which produce it. All the juices known under the name of Turpentine are composed of two ingredients, viz. Oil of Turpentine and Resin. In distilling the turpentine the oil comes over, and the Rosin or Resin remains behind. The distillation continued to dryness is known by the name of Common Rosin or Colophonium; but when water is mixed with it while yet fluid, and incorporated by violent agitation, the mass is called Yellow Rosin. Large quantities of Common Rosin are consumed by salt boilers, united with wheaten flour, to render the grain of salt smaller; also by musicians for effecting greater vibrations. Gas is obtained from this article nearly equal to that from coal. Sandarach, Copal, Mastich, &c. are Gum Resins. (See *Gum.*)

Digitized by Google

SHAGREEN, OR CHAGREEN.

A rough spotted leather, prepared from the skin of the shark, (54) the best kind of which is imported from Constantinople. The Canicula Spotted Shark or Dog Fish grows to about four feet in length, and is found in almost every sea. The skin is stripped off and extended, then covered with bruised mustard seed and exposed to the weather for several days: after which it is tanned. It is very hard until immersed in water, which renders it soft, when it will receive any dye. It is principally used in the manufacture of various instrument cases, and in a dry state it is likewise employed for polishing wood, and other similar purposes.—(See *Morocco.*)

SPAR.

This is generally understood to be a brittle shining substance that will burn to lime. It is a fossil naturally combined with the sulphuric or carbonic acids, and is one of the most common productions in the mining counties of England, particularly Derbyshire. As the term Spar is applied to stones of different kinds, without regarding the ingredients of which they are composed, an additional name is used to express the constituent parts, as Calcareous Spar, Gypseous Spar, Adamantine Spar, &c.—

Digitized by Google

Calcareous Spar has a smooth glass-like appearance; it effervesces with acids, even with vinegar, and when transparent, has the property of presenting two images of an object seen through it, and is often termed Double Refracting Spar.—Felspar is generally of a light grey colour, with a shining pearly lustre. When it is pale or deep red it forms red granite: it is sometimes transparent. It contains a portion of potash, which causing it to decompose, forms clay; and this alkali, uniting with sulphuret or oxide of iron, produces various changes in the appearance of granite.—Fluor Spar, of which the best Derby articles are manufactured, is lime combined with fluoric acid. This acid corrodes glass, which no other acid acts upon.—Adamantine Spar is nearly as hard as a diamond, and is used in the East Indies for polishing gems and grinding other hard substances. It is found in China and Hindoostan.

SPIRIT OF WINE.

A spirit obtained by distilling the saccharine roots, and pulpy fruit of vegetables quite free from colour. When highly rectified it is called Alcohol, and when pure is the same, whether obtained from double distilled brandy, or from any fluid which has under-

Digitized by Google

gone the spiritous fermentation. It is principally employed in the preparation of varnishes, being the only solvent of many resinous bodies; also medicinally.

SEALING WAX.

A composition of gum-lac, melted and prepared with resins, and coloured, the best red with vermilion, and the black with ivory black, but a variety of colours are now made. There are two kinds, a hard one used for sealing letters, &c. and a soft kind designed for receiving the impressions of seals of office to charters, patents, &c. Inferior qualities are also made for common purposes.

STARCH.

A farinaceous sediment found at the bottom of vessels in which wheat has been steeped. It is often made directly from the wheat, where a better sort is required, by putting pure wheat into tubs of water and fermenting it by the heat of the sun; the water being frequently changed during the six or seven days it is thus exposed. When sufficiently softened, it is poured into canvas bags and beaten, by which the mealy parts are extracted, and the liquid flour falling into a vessel placed under to receive it, is soon

Digitized by Google

covered with a reddish fluid, which is skimmed off, and pure water added. After being briskly agitated, as the sediment subsides, the water is drained off, and afterwards the starch is made into loaves, which are dried and then cut into pieces for sale. What remains after the starch is separated from the flour is called gluten, which is a tough elastic substance, without taste, and of a dirty white colour. It appears to be very slightly soluble in cold water, and extremely nutritive. Wheat is indebted for its superiority over other grain to the quantity of gluten it contains. Sugar may be obtained from Starch, but it does not crystallize like common sugar, the grains appearing more in the form of spheres like honey. A pound of good wheat contains 10 oz. of starch, 6 dr. of gluten, and 2 dr. of sugar. Starch may also be obtained from other vegetable substances, as potatoes, tapioca, sago, &c. all of which owe their nutritive powers to the starch they contain. Pulverized Starch is the basis of hair powder, and it was first introduced for stiffening linen in the reign of Queen Mary. (See *Arrow Root.*)

SLATE, OR STEGANIA.

A fossil found in many mountains, and likewise in some counties of Britain and Ireland, near the surface of the soil, the largest masses of which are

Digitized by Google

dug out of one of the Islands of the Hebrides, whence it is exported to England, the West Indies, &c. Of this fossil there are several varieties, principally distinguished by their colour. It is a compact stone, composed of a multitude of even plates, which may be easily split, and it is chiefly applied to the covering of houses, as it forms a strong and elegant roof.

SODA.

A mineral alkali, procured from a marine plant, called the Salsola Soda, growing on cliffs, which is collected and burnt by the Spaniards for the manufacture of Barilla, which name it also bears. Soda of an inferior kind is procured by burning the sea weeds on our own coast, particularly in Scotland, from which kelp is produced. It is the basis of common salt, and when pure, is called Carbonate of Soda.

SPONGE.

A soft, porous, light substance, which easily imbibes water, and this, added to its elasticity, renders it very useful. The greatest portion of what we use, is brought from Smyrna and Aleppo. It is common in the Mediterranean and other seas, and

Digitized by Google

adheres in large masses to rock, stones, and shells. It is chiefly procured by divers; and the people employed to collect it, perceiving it shrink when torn from the rocks, considered it as a symptom of sensation, and this opinion prevailed in the days of Aristotle and Pliny. Sponge was afterwards supposed to be a vegetable substance; then the production of animals, and lastly, it was concluded that Sponge was an animal plant, belonging to the order of Zoophites, (*55*) and that the openings of the branched tubes were the mouths by which it received nourishment. There are various species—among them the Branched Sponge, the Cox-comb Sponge, the Tow Sponge, &c.

SILK.

A fibrous production, spontaneously spun from a caterpillar, called Silkworm, a native of China, where it propagates upon the leaves of the mulberry tree. Great numbers are bred in Italy, and attempts to rear them in Britain have been made but without success; the coldness of the climate preventing the attainment of so desirable an object. The colour of the Silk varies either from the food or climate; that brought from China being almost white, while other kinds appear of a golden hue. The first silk mill was erected on an island in

Digitized by Google

the river Derwent, by John Lombe, in 1717. By corrupting some of the workmen he obtained a sight of the machinery used in Italy, as the Italians, who were long in exclusive possession of the art, prohibited admission to any foreigner. To the labours of this invaluable insect, we owe the luxury of our finer clothing, silks, crapes, gauzes, ribbons, &c. being manufactured from its production. The machinery is now principally worked by steam engines.

SILVER.

A perfect metal, and the whitest of all. It is harder and more elastic than lead, tin, or gold, but less so than copper, platina, or iron. It becomes hard by hammering, but is easily reduced to its former state by annealing (56). It is found in a native state, and also combined with other metals. It is found in some parts of Cornwall and Devonshire; but in very great abundance in the mines of Mexico and Peru. The surface of Silver easily becomes tarnished by exposure to the air. It is employed in coinage; in the manufacture of various articles, and sometimes in medicine. It readily combines with gold, without materially diminishing its ductility, and such alloy is generally employed in gold coinage. The methods of giving a silvery

Digitized by Google

covering to the surface of bodies are various. There are several varieties of this ore among them, Native or Virgin Silver, which has a rich metallic lustre, resembling tin. Ruby Silver, so denominated from its red colour, is the most beautiful of the ores of this metal. Horn Silver, so called from its resemblance to that substance, and consequently very unlike the metallic appearance of the former kinds, is generally sufficiently soft to be indented by the nail.

SUGAR.

A sweet substance obtained from the juice extracted from a cane; or, according to chemists, an essential salt capable of crystallization, of a sweet and agreeable flavour, and contained in almost every species of vegetable, but most abundantly in the Sugar Cane. Next to the cane the American Maple (57) yields Sugar the most prolifically. The juice is obtained from the tree by tapping, and this being collected is boiled and converted into Sugar. Sugar has also been obtained in Germany from beet root, and in France from grapes. Potatoes, wheat, barley, &c. contain this saccharine quality, indeed scarcely any vegetable is destitute of it. The Sugar Cane is the principal production of the West Indies, and the chief article of commerce. It is a jointed

Digitized by Google

reed, generally growing to the height of 7 or 9 feet, and sometimes rising to 12 feet; when ripe it is of a yellow straw colour producing leaves. The joints on one stalk are 40 or 50 in number, and each root has numerous stalks. It requires a rich soil, and that of St. Christopher and Jamaica appears to suit it best. The autumnal months are the season for planting it, and it is propagated by the shoots which are cut from the tops of the old canes. The upland plantations suffer greatly from monkeys, and the lowlands from rats, and both are likewise subject to a disease called the blast, occasioned by a small insect. The crops do not ripen precisely at stated periods. The canes are cut about a yard in length, tied in bundles, and carried to the mill, where they are bruised and the juice extracted from them, which after being duly prepared is sent to Europe, and subsequently refined. After this purification it is called Lump or Loaf Sugar, it being usually made in moulds of a conical form. The art of refining Sugar was introduced to the Europeans by a Venetian about 1659. The tops of the canes when cut are given to the cattle for food, and the upper shoots are reserved for planting. It is supposed to be the sweet cane mentioned in Jeremiah, and seems to have been early known to the Indians and Chinese, but was not used in Europe until after the discovery of America. In a pure form Sugar is one of the

Digitized by Google

most nutritive substances derived from the vegetable kingdom, and being antiseptic a great number of organic substances are preserved from decay by its use (58).

SULPHUR, OR BRIMSTONE.

An inflammable substance, found in the neighbourhood of volcanoes, combined with earths and metals, from which it is separated by sublimation in furnaces. It is insoluble in water, almost devoid of smell, except when heated or by friction, of a yellow colour, and faint taste. It is found native in many parts of the world, and is usually imported in irregular masses, which are melted into rolls, with the addition of coarse resin, flour, &c. Sulphur is of great utility in the arts, and is much used in bleaching, dissolving metals, particularly iron, &c. under the name of Sulphuric Acid or Oil of Vitriol, which liquid is obtained from Sulphur converted into an acid by combustion in the open air, during which process silk, wool, &c. become whitened by being exposed to the fumes. By other processes are obtained what are called Flowers and Liver of Sulphur. Sulphur is used medicinally.

SPERMACETI.

A flaky, white, unctuous substance, glossy, and semi-transparent; in taste something like butter,

Digitized by Google

and in scent rather resembling tallow. It is sometimes prepared from oil, but chiefly from the brain of a species of whale, called Physeter Macrocephalus, purified from the oily matter; and our best oil is obtained from the blubber of the same fish. Spermaceti is employed in the making a superior kind of candle, also medicinally. It is indissoluble with caustic alkalies, and cannot consequently be employed in the formation of soaps, like other oily matters. It is quite soluble in oils, and in a liquid state unites with wax and resins.

SALT.

Soda, combined with muriatic acid, forms Salt, of which there are several descriptions. Sea Salt is an artificial preparation, extracted from the waters of the great ocean. The manufacturing it is carried on in buildings near the sea, called Salterns, and is very simple. Water is drawn off from a cistern where it had been previously left for the sand and mud to settle, and placed in a heated furnace. It is then clarified either with whites of eggs or blood. After being skimmed with thin ash boards, clear sea water is added, and this is repeated three or four times, when the crystals begin to form, and, adhering to each other, sink to the bottom; they are then raked to the sides, when the greater part of the liquor is evaporated and left to drain

Digitized by Google

from the brine, after which it is put into store-houses to dry, and in a few days is ready for sale. The saline liquor which drains from the Salt is called bittern, from its sharp and bitter taste. There is a fine white calcareous earth, found in a powdered form, which separates from the sea water during its coction, which is called powder scratch; and a similar substance adheres to the bottom and sides of the pan, which is termed stone scratch. This is frequently removed, or it would soon destroy the pan. The process of preparing Salt is generally performed in twenty-four hours. Salt is in very great request, being used for correcting the insipidity of food, and for preserving organic substances from corruption. Salted meats and fish, however, are unwholesome, if eaten frequently; but Salt is considered to assist digestion, if not taken too plentifully. Rock Salt is clear and transparent, or coloured red and brown, rarely blue; it is situated in basins of gritstone, though it is considered to belong to the Gypsum formation; it is surrounded in this country by sandstone, indurated clay, and marl, always attended by Gypsum, and sometimes by thin beds of limestone. It forms a considerable article of commerce. Salt is made from brine springs in some parts of England; and in Northwich there is a mine, which, from the peculiar arrangement of the Salt, presents a most singular spectacle, appearing

Digitized by Google

like a Mosaic roof and pavement, supported with pillars of the same substance. In California there are large plains of it, and there are considerable mines of it near Cracow, in Poland. Bay Salt is produced from the evaporation of sea water by the heat of the sun only, and was so named from being first made in the Bay of St. Ubes, in Portugal. It is prepared in many parts of Europe, in America, &c.—Epsom Salts, so called from being originally extracted from the springs at Epsom, are used medicinally, and now principally obtained from the bittern; they contain sulphate and muriate of magnesia. Glauber Salts, or Sulphate of Soda, are procured by distilling common Salt with Sulphuric Acid. They are named after Glauber, a German, the discoverer. The decomposition of Salt furnishes muriatic acid, or spirit of salt (59). Salt is used in glazing pottery, and in some processes of dyeing; also as a manure.

SALTPETRE, OR NITRE.

When the new chemical nomenclature was invented, by which substances are named from their component parts, the salt previously known only by the above titles, being a compound of potash and nitric acid, took the name of Nitrate of Potash. It occurs ready formed in the East Indies, from

Digitized by Google

whence, in a state of moderate purity, the chief supply is procured. In Spain and elsewhere vast quantities are formed by nature. It may also be obtained artificially by submitting putrid animal and vegetable substances, mixed with calcareous earth, to the action of the atmosphere, but the process requires so much time, and is so unproductive, that it is never resorted to until all other sources are unavailable. Its uses are manifold; combined with sulphur and charcoal in various proportions, according to the use for which it is intended, it forms the article of its chief consumption—gunpowder. Hence the following lines from Shakspeare:—

> "It was great pity, so it was,
> That villanous Saltpetre should be digged
> Out of the bowels of the harmless earth,
> Which many a good tall fellow had destroyed
> So cowardly."

The Chinese are said to use two-thirds of the immense produce of the East Indies in making artificial fire-works, in the beauty and variety of which they are allowed to excel all other nations. The Greek fire, so dreadful in ancient warfare, was indebted to this substance, in combination with sulphur, resin, camphor, and other combustibles, for its destructive and inextinguishable nature. It is extensively used in metallurgy, in the manufacture

Digitized by Google

of oil of vitriol, aquafortis, and other highly useful acids; added to salt it is commonly used in preserving meat, to which it gives the red hue; also in medicine. Roger Bacon mentions this salt under the name of Nitre in the 13th century.

SAGO

Is the pith of the Landan Tree growing in the East Indies and Moluccas, considered a great strengthener and restorative. The tree, which resembles a palm, grows spontaneously; the bark is about an inch thick, and covers long fibres interwoven with each other, which surround a kind of meal. When arrived at maturity, a period discovered by a white appearance upon the leaves, it is cut down near the root, and by being split into pieces, the Malays are easily enabled to procure this mealy substance, after which they dilute it with water and then strain it; this pulverized and reduced into granules, is sent to Europe and sold. The Indians eat this meal baked or boiled.

STEEL *(see Iron)*.

SNUFF.

Snuff is tobacco in a powdered state, though other substances are generally added to give an

Digitized by Google

additional flavour, to suit the fancies of the takers. The Scotch and Irish Snuffs are most in repute, but a long catalogue of names might likewise be added. In making Snuff the leaves of the tobacco are further dried after arriving in this country, either pounded in a mortar or ground in a tobacco mill, and then sifted. The Irish toast their leaves and add the stalks.

SALEP.

A nutritious powder, prepared from the root of the Orchis, a plant growing naturally in some parts of England, but principally in Europe and Asia. It forms a considerable part of the diet of the inhabitants of Turkey, Syria, and Persia. The best time for gathering the roots is when the seed is formed and the stalk ready to fall, as the Salep is made of the new bulb which has then arrived at maturity.

SEPIA, OR CUTTLE, OR INK FISH.

A fish, principally noted for a bone contained in the body, which is chemically composed of calcareous matter, of an oval shape, and from its absorbent qualities frequently used as pounce. The structure inside is lamellated, and cellular—friable

Digitized by Google

between the fingers. The outside appears entirely covered with an incrustation upon a horny substance, rendering it impervious to air or water. The bone is found upon most European shores, but very rarely the fish. By a power to fill the minute cells of the internal substance of this bone, it is supposed the fish is enabled to rise or sink at pleasure. When pursued by a fish of prey it throws out a black secreted fluid, by which the transparency of the surrounding water is destroyed, and which thus affords it means of escape.

"Th' endanger'd Cuttle thus evades his fears,
And native hoards of fluid safety bears.
A pitchy ink peculiar glands supply,
Whose shades the sharpest beam of light defy;
Pursu'd, he bids the sable fountains flow,
And, wrapt in clouds, eludes th' impending foe,
The fish retreats unseen, while self-born night
With pious shade befriends her parent's flight."

The famous Indian ink was formerly supposed to be a composition of this fluid, mixed with rice. The ancients wrote with it, hence its name of Ink Fish, and the following lines from Dryden's translation of Perseus:—

"But oh, what crosses wait on studious men!
The Cuttle's juice hangs clotted at our pen;
In all my life such stuff I never knew,
So gummy thick—dilute it, it will do.
Nay, now 'tis water!"

Digitized by Google

The flesh of the fish was esteemed a delicacy by the ancients, and when eaten was served up with its own liquor, which by boiling with the addition of nitre is changed from black to red. Formerly it was, as well as with the eggs, imagined to possess numerous medicinal properties. Tooth powder is sometimes made from the bone, and it is also used by artisans for casting small articles. This fish is the natural food of the spermaceti whale, and parts of its beak are frequently found in ambergris.

TEA PLANT.

A native of China; an evergreen shrub, which grows to the height of five or six feet; the leaves are the only valuable part; and when the plant is three or four years old, they are picked separately, and very carefully dried by heat and air; these infused in water make a beverage now very common in Europe. It grows from seed, upon almost uncultivated ground, and was first introduced among the higher circles in Europe in 1660, when it was sold at 60s. per lb. In China it is from 1s. 8d. to 2s. per lb. Although a variety of names and prices are given to what appear to be different sorts, they are supposed to be the production of one kind of plant, this difference arising from the age, drying, and season in which they are gathered. From the jealous disposi-

Digitized by Google

tion of the inhabitants of China, however, little can with accuracy be ascertained, as they preserve with caution all knowledge relative to their own country from the exploring eye of the traveller.—When tea was commended by her Majesty, Queen Charlotte, Waller addressed the following lines to her:—

Venus her myrtle, Phœbus has his bays;
Tea both excels, which she vouchsafes to praise.
The best of Queens, and best of herbs, we owe
To that bold nation which the way did show
To the fair region where the sun does rise,
Whose rich productions we so justly prize.
The Muse's friend—tea does our fancy aid,
Repress those vapours which the head invade,
And keeps that palace of the soul serene—
Fit on her birth-day to salute a Queen.

TURPENTINE.

A transparent resinous juice, which flows, either naturally or by incision, from the bark of various species of the pine, larch, and fir trees. There are several kinds of Turpentine, the genuine or that from Scio and Cypress, is obtained from the Terebinthus or Pistachia tree, common in Cypress, France, and Spain. It is of a white colour, bordering on green, of a fragrant smell, and as regards taste, bitter and pungent. The Venice Turpentine is extracted from the larch tree, and procured in the

Digitized by Google

greatest quantities in France and Switzerland, from the month of May to September, when it is collected in troughs placed at the foot of the tree, under incisions made by people employed, who empty the receivers every morning and evening. When it first flows from the tree it is clear, and of a yellowish white; but it assumes a citron colour and thickens with age; it possesses a strong smell, and a hot unpleasant taste. The Strasburg Turpentine is imported from Germany, and produced from the silver fir. The consistence of it is between the former kinds—it is of a green hue and fragrant smell. The common Turpentine is extracted from different sorts of pine, particularly the spruce fir, from which tree pitch is drawn. Considerable quantities of this kind are prepared in Great Britain, and the deficiency to supply the markets is imported from America, the Baltic, &c. Each kind yields by distillation an essential oil, which is very inflammable, and of a strong smell. Turpentine is used by painters, varnishers, and farriers, frequently in the preparation of gin, and in medicine. (See *Resin.*)

TALC.

A species of fossil, found in many parts of England, in Spain, Bohemia, &c. There are three varieties. The earthy Talc, the Venetian or Common, and

Digitized by Google

the Indurated Talc. It possesses a smooth and bright appearance, and the masses are composed of thin plates, which easily separate with the point of a knife. It is used in preparing compositions for earthen vessels, and combined with alkalies, it is fusible in a strong heat, and forms a transparent glass; also for making silver sand, for sprinkling on writing, and by the Chinese it is manufactured into various ornamental articles.

TOW *(See Hemp)*.

TIN.

The lightest and most fusible of all metals, but the heaviest of ores, of a greyish white colour, a strong disagreeable taste, and emits by friction a peculiar odour; it is very malleable, and unites with other metallic substances. It is a constituent in bronze and bell metal, and thin plates of iron immersed in melted Tin become coated, and are then called Block-tin or Latten, from which are manufactured canisters, and a variety of culinary articles. It is one of the four imperfect metals, and is obtained chiefly from Cornwall, where it is often found in a native state, but more frequently united with a portion of arsenic,

Digitized by Google

sulphur, and iron. Tin is not so much distributed as many other minerals, and in this kingdom it has only been found in Cornwall and Devonshire, and it is considered as one of the oldest metals, being discovered only in the primitive rocks, granite, and clay slate. It will not associate with lead or calcareous spar. Melted Tin is applied in various ways for tinning and covering other substances; looking glasses are tinned with thin plates, beaten to the proper size of the glass, and fastened on by means of quicksilver.

TAPIOCA, OR CASSAVA, OR CASSADA.

A mild nutritious food, obtained from the root of a native shrub of South America, which grows to the height of six or seven feet, with a knotted stem, broad leaves, and rose-coloured blossoms. The roots after gathering are washed, and the thick rind removed, when the heart, which is a pulpy mass, is passed frequently between cylinders, and turned by a mill till the juice is expressed, which is poisonous. The dry pulp, consisting of farina and vegetable, is then thoroughly dried over a slow fire, and in this state may be preserved for months. The farina freed from the fibrous part is the Tapioca of the shops. A portion of the dry pulp is worked in the hand until a white cream appears on the surface,

Digitized by Google

this being scraped off and washed, gradually sinks to the bottom of the water, which is poured off; then the remaining moisture being placed over a slow fire, and the farina constantly stirred, it concretes into grains resembling sago, which become hard. The Indians prepare a very intoxicating liquor from the Cassava cakes, which taken in any large quantity, frequently, prove very injurious. The Cassada flour is left untouched by every description of insect.

TORTOISE-SHELL.

The shell of the testaceous (60) animal, called Tortoise, used in inlaying, for boxes, combs, &c. The outward covering is composed of two large shells, the one laid upon the other, only touching at the edge. There is a hole at each extremity of this curious body, one for the small head, shoulders, and arms, to peep through, the other for the feet and tail. There are two kinds of Tortoises, distinguished by the name of Tortoise and Turtle; the former living in holes in the mountains, and the latter in rocks or in the sea. The caretta or hawksbill, a species of sea tortoise, furnishes us with the shell so much in repute. The under shell alone is used, and this easily separates with the point of a knife, as soon as it becomes warm, which is effected by a little fire placed beneath it. There are thirteen leaves or

Digitized by Google

scales, eight flat and five rather bent, which, when good, are thick, clear, and transparent, of a yellow and brown colour. When softened by boiling water it may be pressed into any form; and two plates are frequently united into one, when properly heated, so closely as to render the join imperceptible. The polishing is effected by friction with the hands. It may be stained a variety of colours. Tortoises and Turtles consume numbers of shell fish; and the strength of their jaws is reported to be so great, as to enable them with facility to macerate the strongest and roughest shells. All parts of this animal appear to possess uncommon strength, notwithstanding its torpid appearance, as it has been said to bear the weight of five men upon its back, without any apparent inconvenience to itself The flesh of the Turtle is considered as a great delicacy among epicures. The Mediterranean Turtle is the largest of its species, but its flesh is unpalatable.

TAR.

A thick, black, unctuous substance, obtained from old pines and fir trees, and from the distillation of coals for gas. In the spring the bark of these trees is pared off, when the sap flows freely into vessels placed to receive it; this is the common turpentine, which is fit for use directly; the trees are then cut

Digitized by Google

up into pieces, and thrown into a pit, with a hole in the bottom, and burnt in a close smothering heat, when the tar runs through the hole like oil; this is put into barrels for sale, and it only requires to be boiled, without any addition, to become pitch, which in cooling concretes into a black hard mass. Considerable quantities of the tar are made in Britain, but a great deal is brought from Russia, Sweden, and other countries. It is of use in many manufactures, and was formerly in great repute as a medicine (61).

TOBACCO.

An annual plant, a species of Nicotiana, growing in the East and West Indies. The two varieties most in use are the Oronoko or long Virginian Tobacco, and the sweet scented. It was first discovered by some Spaniards, in America, and is generally supposed to have been introduced into this country by Sir Walter Raleigh, about 1585. Large quantities are cultivated in America, Greece, Italy, Turkey, &c. and it is commonly used among the Oriental nations. This annual plant attains the height of from six to nine feet, with a stalk near the root of a yellow velvety appearance. The leaves grow two or three inches from each other, of a dark green colour. The stem and branches are terminated by clusters of delicate red flowers. It forms the basis of snuff, and is recommended in some

Digitized by Google

cases as a medicine. It possesses very narcotic qualities. When the plants have attained about two feet, they are generally topped, and then left till the leaves assume a motley yellow appearance, when they are cut off close to the roots, and dried by the sun. They are then laid in a heap for a few days to ferment, and afterwards suspended for a month upon strings, when they are again fermented and pressed with heavy logs of wood for a week. The leaves being next stripped from the stalks, are tied up in bunches or hands for use. The Tobacco is then considered perfectly cured and ready for manufacturing. Tobacco is made up into rolls by the inhabitants of the interior parts of America, by a machine called a tobacco wheel, with which they spin the leaves into a twist of any size, and then fold them into rolls of about 20 lbs. each. Some lay a number of leaves together, and roll them round with packthread until they are cemented together. The Tobacco plant suffers much from a worm peculiar to itself, and called by the Americans, Tobacco worm. The method of smoking with cigars was introduced before the invention of pipes. A cigar is formed by a leaf of Tobacco, made up into a small twisted roll, and the smoke is conveyed through the winding folds, which prevent it from expanding. By the Indians this plant is considered so valuable, that they use it in all their ceremonies,

Digitized by Google

and it forms a very considerable article of commerce (62). By distillation it yields an oil, which has been found, from repeated experiments, to be poisonous to some animals. A species of this plant is sometimes cultivated in our English gardens. The leaves possess narcotic qualities similar to the henbane.

TAMARINDS.

The fruit of the Tamarindus or Tamarind tree, a native of the East and West Indies, America, Arabia, and Egypt. It grows to the height of thirty or forty feet, with large extending branches, and the trunk is covered with a rough greyish bark. The blossoms appear in clusters of of a yellowish hue, with red veins. The fruit resembles a bean pod, containing several hard seeds, together with a dark-coloured viscid pulp, of a pleasant acid taste. When ripe the fruit is gathered, taken from the pods, and preserved with sugar. Those exported from Jamaica are esteemed the finest.

VANILLA, VANILLO, OR EPIDENDRUM.

An exotic plant, growing in Mexico, with long slender pods, containing numerous black grains, which are exported to Spain, and thence to England. They are used chiefly for imparting an agreeable flavour to chocolate.

Digitized by Google

VITRIOL (OIL OF), OR SULPHURIC ACID.

A combination of oxygen, sulphur, and water, made by submitting the native sulphuret of iron, called pyrites, in powder, to a red heat: this is the simplest and newest method by which it is manufactured on a large scale. Before the above invention it was only obtained by the much more expensive process—the combustion of sulphur and nitre. The vapour exhaled in both these processes, is received in leaden chambers, covered at the bottom with a thin stratum of water, which becomes strongly acidified; it is then boiled in leaden boilers, and the water being converted into steam, flies off, leaving the strong acid to volatilize, which requires a much higher degree of heat than water. It is a dense unctuous, and colourless fluid, caustic, and intensely sour, even when very largely diluted—as a medicine it is tonic, and generally considered astringent. It is an extremely valuable agent to the scientific chemist; it is also of great importance in pharmacy, in the formation of the salts called sulphates, and other products. The well-known Epsom salt, properly called sulphate of magnesia, is a combination of sulphuric acid, magnesia, and water. Glauber salt is likewise a sulphate of soda. Excepting the acetic, the arts and manufactures are more indebted to this than any

Digitized by Google

other acid. It is used in metallurgy, bleaching, dyeing, &c. (See *Copperas.)* In domestic uses, for cleaning coppers, the diluted acid, called spirit of vitriol, is made use of, and sometimes the strong; this has frequently been swallowed by mistake, and in many cases has proved fatal: the best antidote is magnesia and water, and in its absence a copious draught of chalk and water.

VINEGAR.

A very dilute acetic acid (63), which is its base, in combination with mucilaginous, saccharine, and other vegetable matter; it varies in colour from a pale yellow to a deep red, should be perfectly transparent, of an agreeable penetrating odour, and a pleasant acid taste. In wine countries, it is produced by the exposure of wine to the action of air and a due temperature; it is sometimes made from solutions of sugar and saccharine fruits; in this country it is chiefly prepared from malt. An infusion of malt is made, then properly cooled, and put into large and deep fermenting tuns, with a portion of yeast, and the fermentation kept up for four or five days, after which the liquor is distributed into smaller vessels, placed in a chamber heated by means of a stove, and kept there for about six weeks or until the whole is soured; it is then emptied into common barrels, which are placed

Digitized by Google

in the open air, the bunghole of each being simply covered with a tile to keep out the wet; and in this situation such a gentle fermentation goes on, that in four or five months, according to the heat of the weather, perfect vinegar is formed. The process is then completed in the following manner:—Large tuns are employed with false bottoms, on which is put a quantity of the refuse of raisins and other fruit, left by makers of home-made wine, technically called rape. These rape tuns are worked by pairs, one of which is quite filled with the vinegar from the barrels, and the other only three-quarters full, so that the fermentation is excited more easily in the latter than the former, and every day a portion of the vinegar is laded from one to the other till the process is completed; the theory of the acetous fermentation is not yet fully understood.

WAX.

A firm and solid substance, rather heavy, and of a yellow colour, extracted by the bees from the pollen (64) of flowers. When new, it is rather tough, but becomes brittle by age.

> In the nice bee, what sense so subtly true!
> From poisonous herbs extracts the healing dew.

By repeated distillation a volatile oil is extracted from wax; it is easily dissolved with fixed alkalies, and is soluble in water. The white wax is formed

Digitized by Google

from the common yellow by bleaching, and is manufactured into candles, and employed for many of the better purposes of the arts where wax is required. Both kinds are used in medicine. Artists have employed this substance in the formation of models of the human frame, and exhibitions of this nature are of frequent occurrence.

WAFERS.

A mixture of flour, white of egg, isinglass, and yeast, thinned with gum water, coloured, and well beaten together; they are then rolled out to a proper thickness, dried in a stove and stamped out to any shape, generally round. They are used for sealing letters, &c.

WOOL.

A kind of long soft hair, which covers the skins of several animals, particularly the sheep and goat. That of the sheep is used in manufacturing cloths, stuffs, flannels, &c. The most beautiful European wools are brought from Spain and Saxony; the former being celebrated for its fine breed of Merino sheep, which have been introduced into this country, and are here found to maintain the excellent qualities of the fleece. The Highland Wool and that from the Shetland Isles is nearly equal in quality, as also that from New South Wales. The hair of the goat,

Digitized by Google

an animal common in some parts of England, but particularly in the mountainous districts of Wales, is made into various articles, such as coarse hair cloths, &c. From the goats of Angora, a town of Natolia, a beautiful wool is obtained, which is very valuable, and manufactured into shawls, much esteemed in this country; and those called cashmerian, manufactured from the best of this species, are particularly elegant. Mohair is also obtained from a goat found in or near Angora, and is converted into a variety of similar articles.

WHALEBONE.

The upper jaw of the Balæna or Whale furnishes this bone. It is formed of thin parallel lamina, some four yards in length; of these there are generally 250 on each side. They are surrounded with long hair to prevent the tongue being injured by them, and they also act as strainers in preventing the return of the food when they discharge the water out of their mouths. The other bones of the whale are hard, porous, and full of marrow. There are two very strong bones which sustain the upper lip, lying against each other in the shape of a half-moon. Whalebone was formerly an article of great value in commerce, and sold for £600 the ton. Its price,

Digitized by Google

however, when compared with the other more valuable part of the fish is an object of little attention to the whale fishers (65). The principal uses to which whalebones are now applied are spokes to wheels of light carriages, fishing rods, whips, sticks, &c.

ZINC.

Ores of Zinc form two distinct substances, as Blende or Black Jack, and Calamine; both of which present several varieties, though they form the same metal. Blende is commonly black, brown, or yellow, of different shades; it is massive, and often appears in clusters upon the surface of other minerals; it may be easily cut by the knife, and by scratching it, a lighter coloured powder is produced; some of the yellow varieties, when rubbed even with a pen, yield phosphorescent sparks. These ores resemble tin, but are neither so heavy nor so hard. Common Calamine greatly resembles some of the earthy minerals; it is frequently cellular, not unlike bone; but its weight will lead to a detection of its metallic nature; it strongly effervesces with acids, and occurs in masses, brown, yellow, and green. It is found in great abundance in Derbyshire, and other limestone counties. Ores of Zinc are of recent dis-

Digitized by Google

covery in this country, the metal being formerly imported from China. A new metal, called Cadmium, has lately been discovered in the Derbyshire Calamine. Besides the use of Zinc in medicine, it is of great importance in the arts. Mixed with copper in different proportions, it forms brass and pinchbeck; and united with tin, it forms a kind of pewter. From its inflammable properties it is sometimes used in fire-works. The Sulphate of Zinc forms white vitriol (66).

Digitized by Google

Digitized by Google

NOTES.

(1) *Essential Oils* are obtained only from odoriferous substances; which oil being collected, the fragrance of the flower from which it is extracted, so fugitive in the common course of nature, is preserved, and, as it were, embodied and made permanent. Essential oils of vegetables are prepared by distillation. They contain the fragrance, warmth, and frequently the active powers of the substance from which they are drawn; whence they have received the name of Essences or Essential Oils. To the former kind, belong the oils of roses, camomiles, &c.; to the latter, the oils of cloves, &c.

(2) *Distillation* is the art of separating or drawing off the spirituous, watery, oily, or saline particles of a mashed body from the grosser and more earthy parts by the aid of fire, and then collecting and condensing them by the application of cold.

Digitized by Google

(3) *Alkali* is a term given to substances which excite fermentation when united with acids. It was originally applied only to the salt extracted from the ashes of the plant Kali. Alkaline substances are of various kinds, but the fixed alkalies are potash and soda, and there is a volatile alkali, called ammoniac; potash is obtained by burning vegetables; soda from sea salt; and ammoniac from animal substances, and in the distillation of coals for gas. Alkalies have the property of converting vegetable blues into greens, and combined with acids, neutralize each other, and form the neutral salts. Mixed with fats, they make soap; and melted with silex (now called Quartz), glass.

(4) If a salt be dissolved in water, it is said to be in *solution*.

(5) When vegetable juices, watery or spiritous decoctions, or infusions, are exposed to a continual heat, the fluid gradually evaporating carries off with it such volatile matters as it was impregnated with, and leaves the more fixed united together in one mass. The mass which remains from the evaporation of the expressed juice of a plant, is called *inspissated juice*; from watery decoctions or infusions, an extract; (which term is also frequently used as a general appellation for all three kinds) and from spiritous tinctures, a resin, or essential extract.

Digitized by Google

(6) The term *solubility*, is applied to any thing capable of being dissolved.

(7) *Decomposition* implies the separation of the elementary substances of which any compound substance is formed.

(8) *Volatilization* is the art of rendering fixed bodies volatile, or of melting them by fire into a fine thin vapour or spirit, which easily dissipates and flies away.

(9) *Sublimation* is the condensing and collecting in a solid form the fumes of bodies raised from them by heat. It differs but little from distillation, except that in the latter only the fluid parts of bodies are raised, but in this the solid and dry.

(10) *Fusion* is the reduction of solid bodies into a state of fluidity by fire.

(11) If aqua regia be poured upon *crude* or *raw* antimony, the metallic part will be dissolved, and the sulphur thrown out, in the form of a yellowish substance, partly to the sides and partly to the surface of the liquor; and this purified by sublimation appears the same with pure common sulphur or brimstone.

(12) *Bitumens* are certain bodies, which have a great resemblance to resins and oils, and are found in sub-

Digitized by Google

terraneous situations. It is considered that all Bitumens are of animal or vegetable origin; and that the difference between them and resins, and other oily matters of vegetables and animals, are the natural effects of time, or of an alteration produced on them by mineral acids, or of both causes combined. Amber and jet (sometimes called black amber) are doubtless Bitumens, and the origin of jet is clearly traced. At Montpelier several cart-loads of trees have been dug up and converted into jet, with their original forms so perfectly preserved, that the species of trees thus bitumenised can often be determined. In Languedoc several pieces of wood are preserved whose external part is in the state of jet, while the internal part still remains in the ligneous state; so that the transition from the vegetable to the mineral state may be distinctly observed. The most singular instances, however, are those of a wooden pail and wooden shovel having been converted into jet, which is affirmed by undoubted authority.

(13) *Calcination* is the reducing of substances to a calx by fire. Calx properly signifies lime, but it is also used for a fine powder remaining after the calcination or corrosion of metals and other mineral substances. It is a general fact that metals are always rendered heavier by calcination.

(14) *Malleable* is the capability of being spread by beating.

Digitized by Google

(15) In many parts of France it is customary to suspend a bush outside any house where wine is to be sold during the vintage, hence arises the proverb of "Good wine needs no bush."

(16) *Factitious* is the being made by art, in opposition to what is made by nature.

(17) Gen. chap. iv. ver. 22, "And Zillah, she also bare Tubalcain, an instructor of every artificer in brass and iron."

(18) Solid substances are reduced into powder by *pulverization*, and *trituration*, or *levigation*. Pulverization signifies the separation of bodies into smaller ones, without destroying the elementary ingredients: brittle substances are pulverized by hammers. Trituration, or levigation, is the reduction of any substances to powder upon a stone with a muller, as colours are ground. Mechanical trituration, however carefully performed, is quite incapable of separating from each other substances that are chemically united.

(19) The *polypi* is an insect of a snail or jelly-like substance, and possesses the wonderful property of each part becoming again a perfect insect, although divided into many pieces. It has been supposed by some naturalists, and is universally believed by the Negroes, that fish are rendered poisonous by feed-

Digitized by Google

ing on the coral polypi; but others have argued that the flat obtuse nose of fishes cannot possibly detach the polypi from their encasements. The numerous polypi inhabiting corals or corallines have always been found to protrude but little from their abode, which gives them a very peculiar appearance. In some the animals are obvious, but in others they cannot be seen; but on passing the hand along the surface, the touch does not indicate the feeling of an immediately stony basis. Corals of recent formation are much more porous and fragile than when of some age; because the interstices have not been filled up, and those parts which have been formed require exposure to the air to consolidate and harden them.

(20) The Chinese have, within the last few years, succeeded in cutting coral beads of much smaller dimensions than has been effected in Europe, which are called seed coral. Large balls of coral are sometimes worn among the Chinese as insignia of office; and there are extant many pieces of sculpture of this article; among them the finest specimen is considered to be a chess-board and men in the Tuilleries, Paris, which were the property of the late Queen of Naples. As it frequently occurs that corals are discoloured, the following method for cleansing them, and for removing any extraneous substance, may be serviceable:—Steep them in a solution of potash and soft soap for a few days,

Digitized by Google

after which immerse them in warm water. If too much discoloured to render this effectual, steep them in a weak solution of muriatic acid, after which dip them in alkali, to neutralize the acid, and then wash them in warm water.

(21) Volatile, or odorous substances, seem particularly destructive to the insects and animalcula that feed on the substance of the vegetables. The woods that contain aromatic oils are remarkable for their indestructability, and for their exemption from the attacks of insects, which is particularly the case with the cedar, rose-wood, and cypress.

(22) Metals which, though melted in the fire, do not diminish in weight, or undergo any other sensible alteration, are called *perfect* metals, of which order are gold and silver. Those metals are called *imperfect* which are reducible by fire, and generally change into a calx; of this order are lead, copper, iron, and tin. The former of these possesses the property of changing into glass, and of vitrifying all the other metals except gold and silver. Quicksilver holds a kind of middle place, for like the imperfect metals it may be calcined, though not readily, and like the perfect ones it may be reduced by heat alone. The others are called semi-metals.

(23) *Borax* is a salt produced in the mountains of Thibet in Asia, naturally, and artificially by evaporation.

Digitized by Google

That imported from China is purer than that from Thibet, and is found in a natural state, in small masses of irregular crystals, of a faint white colour. Borax is useful in metallurgy, for soldering, in the fusion of vitrifiable earths, with which it forms glass; as also in several other chemical processes; and dyers frequently employ it for giving a gloss to silks.

(24) The veins which afford metallic substances are fissures more or less vertical, filled with a material different from the rock in which they exist, and generally extending from east to west. A brown powder at the surface of a vein always indicates iron or tin; a pale yellow powder, lead; and a green colour in a vein, or in water, denotes the presence of copper.

(25) *Precipitation* or coagulation is an operation the very reverse of solution, and is the bringing a body suddenly from a fluid to a solid state.

(26) The blue opaque substance called Turquoise, worn for ornament, and generally considered a stone, is the tooth of an animal penetrated by the blue calx of copper, which may be extracted from it by distilled vinegar. It is principally found in Persia and France.

(27) The *Alluvial* formation consists of the loose earthy soil which covers the solid rocks, or which, by

Digitized by Google

being separated by water, air, &c. is deposited in beds.

(28) *Siliceous* earth, or silex, or quartz, is hard, and resembles glass; when pure it does not melt by itself in heat, and after burning does not fall into a powder like calcareous earth. It excites no effervescence with acids, and in the fire it melts very easily to glass, with a fixed alkaline salt.

(29) *Smalt* is a species of glass of a dark blue colour, a preparation of calcined cobalt, with pulverized flint and potash. It is used in many arts and manufactures, and by clear starchers, under the name of powder blue.

(30) The cobalt is first to be mixed with a solution of nitro-muriatic acid, and this fluid is then to be so diluted with rain water as to prevent its staining paper when applied upon it. The paper ought to appear white when cold, and become green on being heated. Landscapes may easily be formed to represent the dreary season of winter, by only shading with Indian ink, and the scene be soon changed into the rich verdure of spring by application of a slight degree of heat, where the *sympathetic* ink has previously been brushed over the parts thus traced. If it remain heated too long the green will become fixed.

Digitized by Google

(31) *Oxyde* is a term used to express a numerous class of bodies, formed by the union of certain bases with a smaller proportion of oxygen than is required to convert them to acids; the principal of which were formerly called metallic calces, and have for their base some metallic substance. Metals are converted into oxydes by combustion, or by solution in acids; and many of them assume this form from the action of the atmosphere alone, but more easily when this is assisted by moisture.

(32) Oils by *expression* are obtained from the seeds, leaves, fruits, and barks of plants, which, being pounded in a mortar, the oil is forced out by means of a press, without the aid of heat. Such are the oils of olives, almonds, linseeds, &c. As a proof of the time these oils may be preserved, two glass jars of olives and olive oil have been dug up at Pompeii quite fresh and fit for use. It has been asserted that the plague may be checked by anointing the body with olive oil, and that it is a cure for the bite of a viper, and a powerful antidote to various poisons.

(33) There is a range of chalk hills in Berkshire, part of them called the Vale of White Horse, from the figure of a gigantic horse being rudely sketched on the side of one.

(34) Whiting is chalk powdered and well washed; this mixed into a thick paste with Linseed oil is called

Digitized by Google

putty, and is used by glaziers and painters. The powder of calcined tin, used for polishing iron and steel, is frequently called putty.

(35) Ochre is a genus of earths of various colours; a combination of alumina and red oxyde of iron. These colours are of great use in oil and water painting, and the hues may be varied by means of fire. Ochres are found more abundantly in England and Italy than in any other part of the world.

(36) The wood called Citron wood, and used by turners in France and Germany, is not from the Citrus, but the wood of an American tree called by the natives Candle wood, as it will burn when cut into splinters in a similar manner to a candle.

(37) Argentiere or Cimolus is one of the Cyclades, a cluster of islands near Delos, in the Archipelago.

(38) The terms applied to diamonds, are first, second, or third water, according to their value; and the name of Oriental and Occidental is given to this and other precious stones, not in reference to their being the production of the east or west, but only to denote their value; the latter term being applied to inferior stones.

(39) Pyrites is a genus of inflammable substances, composed of sulphur which has dissolved itself with

Digitized by Google

metals. There are many kinds, as of iron, copper, gold, &c.

(40) Aqua is a name frequently applied to particular medicines or menstruums, in a liquid form; among the numerous varieties distinguished from each other by an additional term, is aqua fortis, which is a mixture of nitrous and vitriolic acid, and is of great use to dyers and artificers, from its dissolving powers. Aqua regia is a combination of nitrous and marine acid, and is particularly useful in dissolving all metals except silver.

(41) Beta, or Beet, a plant of which there are several species very common in England, and principally cultivated as food for cattle.

(42) Mandragora is a species of Atropa, or Deadly Nightshade.

(43) Galls are protuberances formed upon different trees by insects of the fly kind, which by degrees become hardened by the air. The oak galls are most esteemed for ink, as they impart a dark purple or black colour to vitriol and water. The most superior galls are brought from Aleppo.

(44) There are two kinds of lamp black; the best is obtained from resinous matters, from the soot which arises in the burning the dregs and pieces of bark

Digitized by Google

of the fir and pine trees. The smoke is collected upon skins, with which the chimney is lined on purpose to receive it. In England this is made from the dregs at the turpentine houses, but the greatest quantity is imported from Germany, France, Norway, &c. An inferior kind is collected in close vessels, where bones have been burnt.

(45) *Frankfort*, or *German black*, is prepared from burnt lees of wine, ground with burnt ivory, bones, or fruit stones.

(46) *Bird-lime*, a substance procured from the holly, resembles in its properties Indian rubber.

(47) *Soap* is an unctuous kind of paste, made with oil, or fat substances, and an alkali sometimes actuated with quick lime. The greatest quantity is made in France, Spain, Italy, and Portugal, where olive oil is very plentiful. Next to this oil, tallow is considered the best ingredient, and this, with soda, forms the white soap, and with the addition of resin, the yellow; but there is this difference, that with soda, oils form a hard soap, while potash forms a soft one.

(48) *Glass* is a transparent brittle factitious substance, produced by the action of fire upon a fixed salt and sand, or stone that readily melts. The materials employed in the manufacture of glass may be

Digitized by Google

reduced under three classes, viz. alkalies, earths, and metallic oxydes. Bottle glass, the coarsest kind, is composed of kelp, or the refuse of soap boilers and common sand. The green colour is owing to the admixture of iron. Flint glass is formed of soda, pounded flints, and oxyde of lead. Window or crown glass contains no lead.

(49) *Litharge* is the refuse of lead, and is used in the composition of the finer glasses called pastes, designed as imitations of precious stones, it rendering them more solid and brilliant. The base of all artificial stones, is a paste composed of silex, potash, borax, oxyde of lead, and sometimes arsenic. The best silex is obtained from rock crystal, and the next from white sand or flint.

(50) A drop of animal oil laid on an ear-wig, hornet, wasp, &c. will cause their immediate death.

(51) The bone of a very peculiar fish principally inhabiting the Mediterranean Sea. There are several species, but the officinalis, or officinal cuttle contains this bone. It is used as pounce, also by silversmiths, &c. to make moulds for spoons and other small work, being soft, and taking a good impression by merely pressing together with the pattern placed in the centre, also by farmers. The head of the fish appears from between eight kinds of arms, with which they fasten themselves to the

Digitized by Google

rocks, or seize upon their prey; these are frequently eaten off by the conger eel, but grow again. When taken out of the water they make a noise resembling the grunting of a hog. The eyes when dry resemble pearls, and are sometimes formed into necklaces. Every species emits a black fluid, which when fresh taken, is of a viscid consistence, a peculiar fishy smell, and very little taste; it is preserved for use by being spread round saucers or gallipots so as to dry before putrefaction commences. It is sometimes used for writing ink, and, as a paint, under the name of sepia, and is considered much superior in point of working to Indian ink.

(52) Printing was introduced into England during the reign of Edward the Fourth, by William Caxton; but no certain record has been handed down fixing the precise time when this art received its birth, or to whom to ascribe the honour of the invention.

(53) *Gold* is the first and most valuable of all metals, not only from its scarcity, but from its admirable properties. It is the hardest and most unalterable of all bodies. It can bear, for two months, being in the hottest fire without any sensible loss in its weight. Its parts are so fine, that a grain of beaten gold can cover fifty square inches, in such a manner that the naked eye may distinguish, on the two surfaces, four millions of particles; and its duc-

Digitized by Google

tility is such that a single grain may be drawn out to a thread five hundred feet long.

(54) This is a species of the great white shark, a formidable enemy to mariners. It attains the length of thirty feet and upwards, and frequently weighs from 3 to 4000 lbs. It is principally valued for its oil, and its flesh is eaten in Norway and Iceland, but is coarse and strong.

(55) The *zoophites* (zoon, an animal, phyton, a plant); or animal plants, are nothing but insects; though by their outward form, their immobility, and their manner of propagating by buds and seeds, they are very like real plants. Their animal nature only shows itself by the sensibility and voluntary motion observed in them. Most of the zoophites hold by a sort of root to the sea, or the waters they live in. Some inhabit stony and chalky places; others are surrounded with a shell, more like horn; and lastly, some are entirely soft and fleshy. The most remarkable of these is the coral structure.

(56) *Annealing* is the art of tempering, or of heating any thing to bring it to a proper degree of hardness; or to mix different ingredients so that one part qualifies the other.

(57) The *sugar-maple* is so called from its juice affording sugar when boiled. It is much cultivated in Ame-

Digitized by Google

rica for this purpose, and to a certain degree in France. A middle-sized tree will yield, without injury to itself, 30 or 40 quarts of juice in the spring, and this quantity will produce a twentieth part its weight of sugar. The wood of the common maple tree is used by turners frequently for musical instruments, being remarkably white, and may be turned so thin as to render it nearly transparent.

(58) *Loaf sugar* is made from the raw sugar, by lime water being poured upon it, and bullocks blood added instead of whites of eggs. The serum or white part of the blood becomes dissolved, but coagulates when hot, and forms a net-work or strainer, which carries upward all the opposing matters. The scum is removed and boiled with lime water until it becomes transparent. The gross fluid matter that remains after refining sugar, is called treacle or molasses, and no boiling can bring it to a consistence more solid than syrup.

(59) *Muriatic acid, or spirit of salt,* is colourless when first made, but acquires a pale straw colour by keeping; it forms the salts called muriates, and is used in medicine, the arts, and manufactures. Muriatic acid gas being easily produced by pouring sulphuric acid upon common salt, is a ready and powerful agent in the destruction of infectious matter. The smelling salts are formed of subcar-

Digitized by Google

bonate of ammonia, or volatile salt, with the addition of perfumes: large quantities are made from the products of the distillation of coal in the gas works.

(60) *Testaceous* animals are such as have a calcareous covering or habitation, in which the animal, otherwise naked or fleshy, lives included and protected.

(61) A lint dipped in an infusion of tar in water, and applied to the sting of a wasp, will greatly alleviate the pain and prevent swelling.

(62) John Nicot, Lord of Villemain, was sent ambassador to Portugal in 1559, whence he brought the plant, which, from his name, was called Nicotiana, but is now more generally known by the name of tobacco, as it flourishes particularly upon the island of Tobago.

(63) Pure *acetic acid* is colourless and limpid like water; it is procured from vinegar by distillation, and also in very large quantities by destructive distillation from wood; this is called pyroligneous acid, and answers (properly diluted) all the purposes of that distilled from vinegar, in pickling and preserving meat, fish, &c. but it is not so pleasant as a condiment. With various bases it forms the salts called acetates. It is useful in the arts and manufactures, also in medicine, and highly concentrated is an ex-

Digitized by Google

cellent remedy for warts. With the addition of camphor it forms the aromatic vinegar.

(64) As soon as the plants begin to flower the busy bee no longer remains in an inactive state, but quickly proceeds from the hive in search of honey and wax;—the former of which is a sweet limpid juice, found in the nectaries of flowers, and the latter is made by the bees from the dust contained within the anthers of blossoms. The anther, which is supported by the filament or thread of the flower, is a little bag or case, containing the part which is called the pollen. This last is apparently a fine meal; but, when seen through a microscope, every particle appears a little bag, containing a meal yet finer. As the pollen ripens, it swells the anthers, which at last open, and shed it upon the stigma or summit. With the wax the bees form those little hexagonal cells which serve as store houses for the honey. In some parts where bees are kept, it is positively asserted, in case of the death of any of the family, that the bees are put in mourning, by attaching a piece of black cloth to each of the hives, without which the consequence would be fatal to them all. This superstition is followed up to even a greater degree in some parts, viz. that in the event of the death of any of the family, it is considered necessary to inform the bees of the circumstance, otherwise they will desert the hive, and seek out other quarters.

Digitized by Google

(65) There are several species of the whale, but the common Greenland whale is the one with which we are best acquainted. It usually measures from sixty to seventy feet, the head of which makes one-third of its size. The tongue appears fixed in the lower jaw, and resembles a large lump of fat; the eyes are small, and placed very far back in the head. The skin is smooth, and generally black, spotted with yellow and white. The outward skin appears about the consistence of parchment, but the inner one much thicker, and under this covering lies the fat or blubber, which is from eight to twelve inches deep, sometimes more, according to the age. A large fish will produce 20 or 25 tons of oil, the price of which varies from £30 to £45 per ton.

(66) A very pretty experiment may be performed with a small particle of zinc, showing the great affinity it has to lead. Lead is acted upon by vinegar, and forms acetate or sugar of lead, which, when dissolved in water, leaves a white precipitate. If a piece of zinc be suspended by a thread, and immersed in the fluid, it will be covered almost instantly with the finest flakes of lead, regenerated in its metallic state, which may be seen approaching it in all directions.

FINIS.

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google